Volume XXI.
Number 6.

DECEMBER, 1901.

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OFFICIAL DIRECTORY
OF THE
TEXTILE INDUSTRIES
ALSO THE
YARN TRADE INDEX

Office Edition, $2.50
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A leading firm writes:—
"We think the new features of the classified departments an exceedingly good idea and feel that it will be a great source of information in the various industries mentioned."

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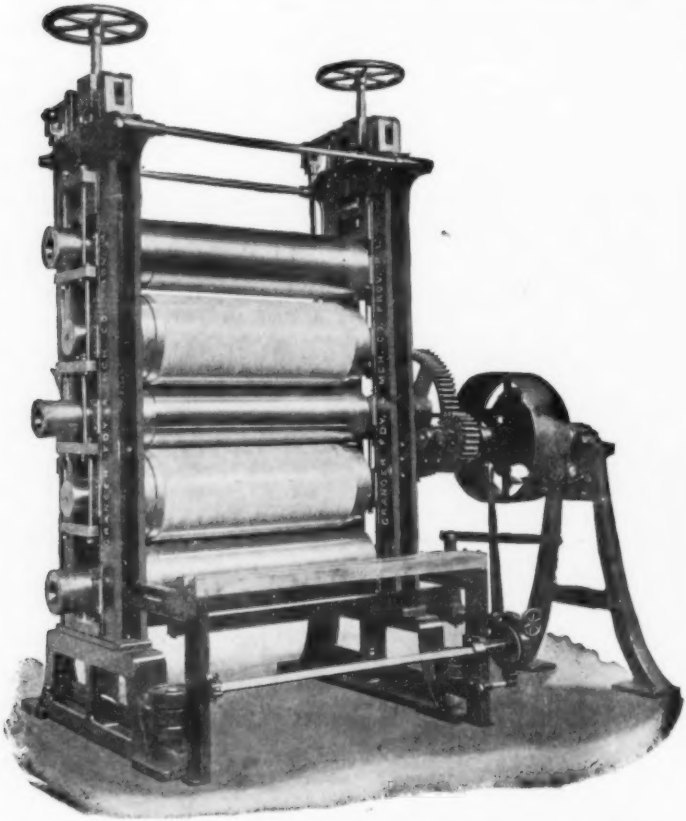
CLASSIFIED INDEX FOR BUYERS, - Page 1179

GUILD & LORD,
PUBLISHERS.

95 SOUTH STREET,
BOSTON, MASS.

Bleaching, Dyeing, Drying,

And Finishing Machinery.



CALENDERS, MANGLES AND ROLLS.

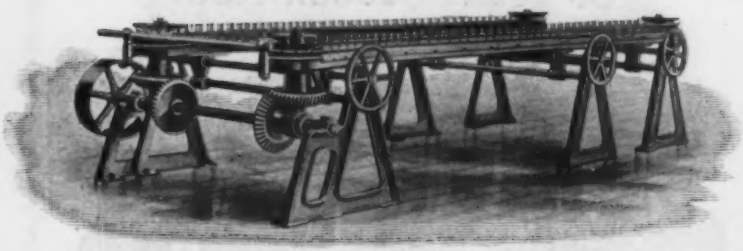
TENTERING MACHINES,
MERCERIZING MACHINES.

Granger Foundry and Machine Co.

PROVIDENCE, R. I.

Bleaching, Printing, Dyeing and Finishing Machinery

For Textile Fabrics.



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TENTERING MACHINES.

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RETURN (8, 10 or 12) returns FOR WORSTED AND WOOLEN GOODS.

HOT AIR (2 or 4 returns) FOR GINGHAMS, ETC.

AUTOMATIC CLAMPS (Patented). SPRING CLAMPS. PIN CHAINS.

H. W. BUTTERWORTH & SONS CO.,

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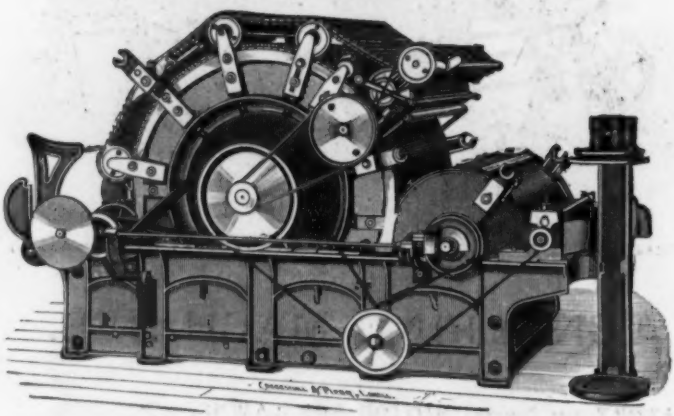
LOWELL MACHINE SHOP,

LOWELL, MASS.,

Builders of

COTTON MACHINERY

OF EVERY DESCRIPTION.



Revolving Flat Cards, Railway Heads,

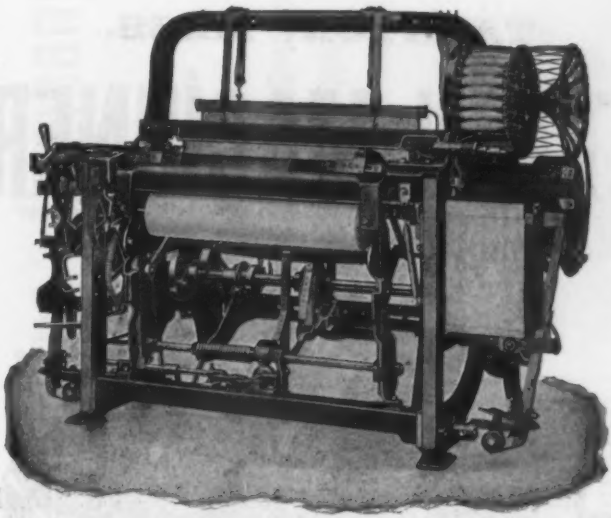
Ring Spinning Frames, Fly Frames,

Drawing Frames, Spoolers, Warpers,

Slashers, Looms.

Worsted Machinery.

ILLUSTRATED CATALOGUES SENT ON APPLICATION.



OUR LATEST

NORTHROP LOOM

Although our order list lengthens and strengthens, we do not adopt the simple and inexpensive plan of building without change, but continually add improvements whenever possible. A careful study of the above illustration will prove of interest to adepts in the Art of Weaving.

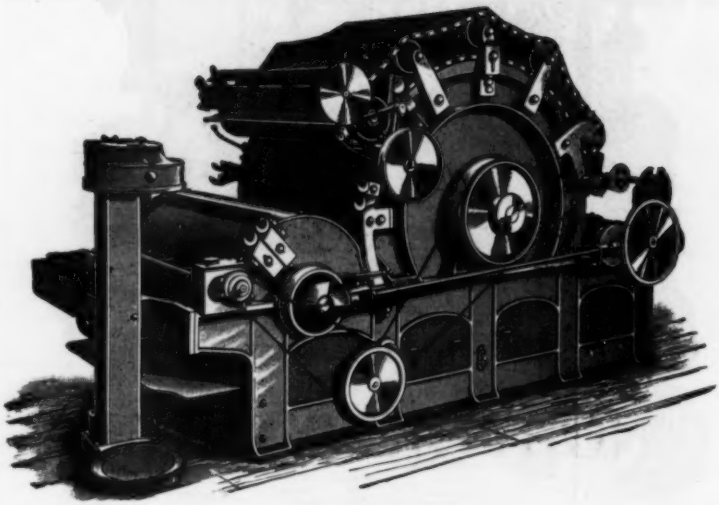
THE DRAPER COMPANY,

Hopedale, Mass.

MASON MACHINE WORKS,

TAUNTON, MASS.

COTTON MACHINERY



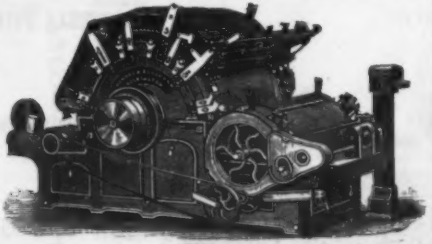
Cards, Combers, Lappers, Railway Heads, Drawing Frames, Spinning Frames, Mules and Looms,

INCLUDING THE

Mason-Northrop Loom.

SOUTHERN AGENCY:

D. A. TOMPKINS CO., Charlotte, N. C.



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American Machine Company,

LIMITED,

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Revolving Flat Cards.

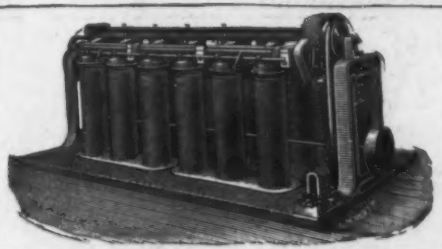
The Simplest and Most Accurate. Greatest Production. Best Quality. Least Waste.

OVER 18000 WORKING.

Electric Stop-Motion Drawing.

The quality of the sliver produced cannot be surpassed. Waste, "single" and roller laps are prevented, production increased, and great saving effected.

OVER 56,000 IN OPERATION.



Bale Breakers. Feeders,

Combined Self-Feeding Openers,

Breaker and Finisher Lappers,

All made from entirely new patterns and containing many valuable patented improvements.

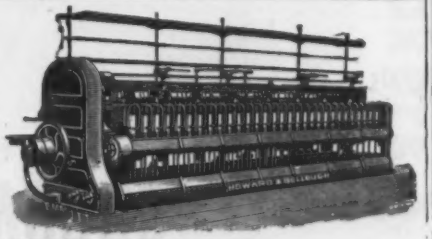
Slubbing, Intermediate, and Roving Machines.

New patented Differential motion, New Arrangement of Cone Drums, New System of Balancing top or bobbin rail, etc.

SPINNING FRAMES, CONE WINDERS,
TWISTERS, WARPERS AND SLASHERS.

All parts of above machines are made by special tools and are exact duplicates.

We Invite Investigation and Comparison.



THE WHITIN MACHINE WORKS,

Whitinsville, Mass.

Revolving Flat Carding Engines.

Sliver Lap Machines.

Ribbon Lap Machines.

Combers.

Railway Heads.

Drawing Frames.

Spinning Frames.

Spoolers

Twisters.

Reels

Long Chain Quilling Machines.

Looms.

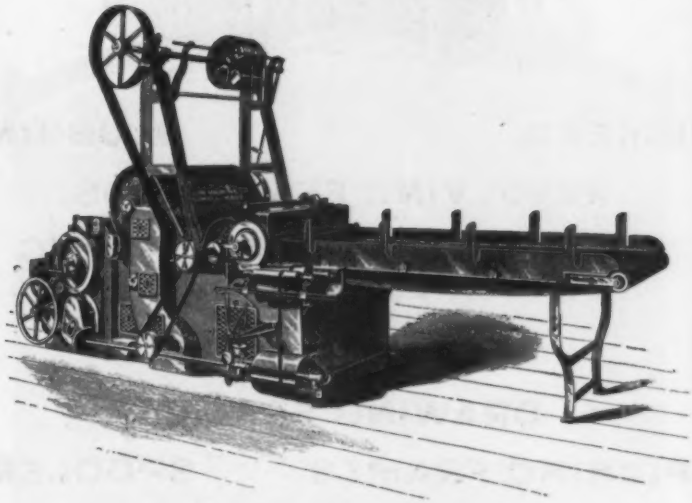
COTTON MACHINERY

SOUTHERN AGENT - S. W. CRAMER,

38 South Tryon Street, CHARLOTTE, N. C., and Equitable Building, ATLANTA, GA.

The Best Pickers.

In the Cotton Field nothing equals the
DARKY COTTON PICKER.



In the Cotton Mill nothing equals the
KITSON COTTON PICKERS.

KITSON MACHINE CO., Lowell, Mass.

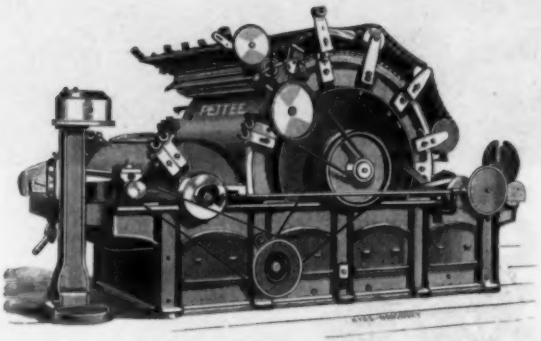
Largest Builders of Cotton Openers and Lappers in the World.

STUART W. CRAMER, Southern Agt., Charlotte, N. C. and Equitable Building, Atlanta, Ga.

Saco and Pettee Machine Shops,

Newton Upper Falls, Mass., U. S. A.

COTTON MACHINERY



PICKERS, SLUBBING,

REVOLVING FLAT CARDS,

INTERMEDIATE AND ROVING FRAMES,

RAILWAY HEADS,

DRAWING FRAMES,

SPINNING FRAMES, SPOOLERS.

SHOPS:

Biddeford, Maine.

Newton Upper Falls, Mass.

Southern Agent: A. H. WASHBURN, Charlotte, N. C.

START RIGHT!

IN A RACE, THE RIGHT KIND OF A START FREQUENTLY DETERMINES THE FINISH.

SO IN MANUFACTURING COTTON, THE PREPARATORY MACHINERY IS ALL IMPORTANT TO THE FINISHED PRODUCT.

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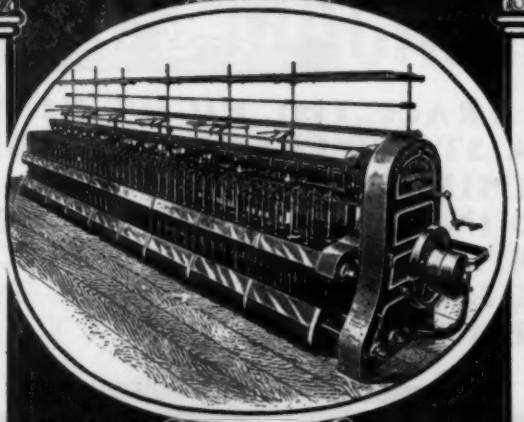
THE RIGHT START MAY BE HAD BY USING THE A.T.ATHERTON PREPARATORY MACHINERY. BUILT BY

THE A.T.ATHERTON MACHINE CO.

PAWTUCKET, R. I.

H·G·McKERROW·

DRAWING FRAMES & SPEED FRAMES
· CARDS · · MULES ·



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CARD CLOTHING · WASTE MACHINERY

COTTON MACHINERY

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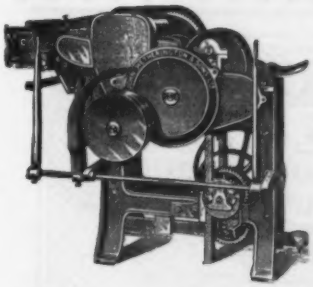
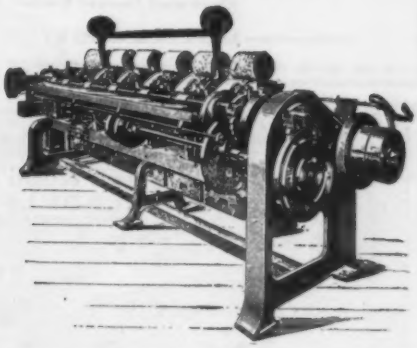
——MAKERS OF ALL KINDS OF——

Machinery for Preparing, Spinning, Doubling Cottons, Cotton Waste, Woolen, Etc.

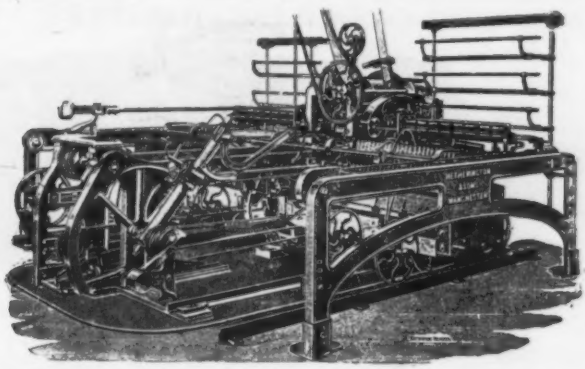




Sliver Lap Machines
with Self Acting Stop Motion.

Ribbon Lap Machines
with six Laps behind for preparing Laps for Combing Machines, made to suit any width of Laps required.

Combing Machines,
single and double Nip for six or eight heads, to take Laps from 7 1-2 in. to 10 1-2 in. wide. Patent Stop Motions for stopping Machine, when delivering too light Slivers, or after any required length has been delivered.



Patent Self Acting Mules (Hetherington and Curtis Patterns of Headstock) for coarse, medium and fine yarns.

Over Three Million Spindles at Work in the U. S.

SOLE IMPORTER FOR UNITED STATES AND CANADA,

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NEW ENGLAND BUTT COMPANY,

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BRAIDING MACHINERY,

All Styles and Kinds for Flat and Round Braids.

SOLID SASH AND CURTAIN CORDS.

Shoe and Corset Laces, Banding and all

BRAIDED FABRICS.

FAIRMOUNT MACHINE CO.

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THE LATEST AND BEST

LOOMS, DOBBIES, HARNESS MOTIONS

BEAMING, SPOOLING, WINDING, DYEING AND SIZING MACHINERY.

POWER TRANSMITTING MACHINERY.
FREIGHT ELEVATORS. PATENT FRICTION CLUTCHES.

YOUR SPOOLING!

Improve the Quality.
Decrease the Cost.

The Barber Knotter will do it. Can you afford to be without it?

BARBER & COLMAN, Rooms 1111-1112, 11 PEMBERTON SQ.
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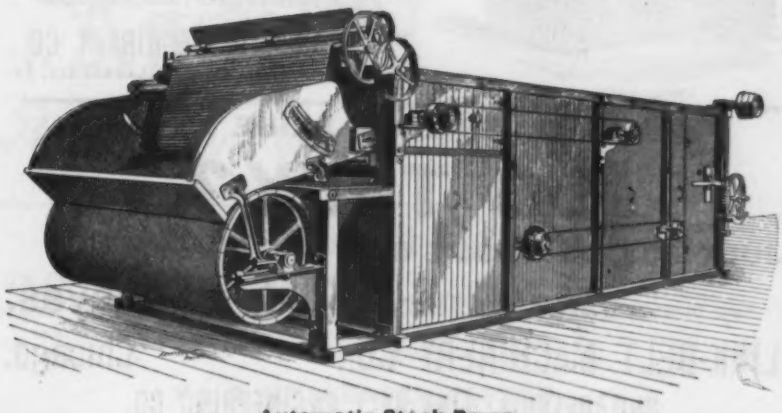
"CYCLONE" DRYERS

For WOOL, COTTON STOCK, YARN,
UNDERWEAR, STOCKINGS. : :

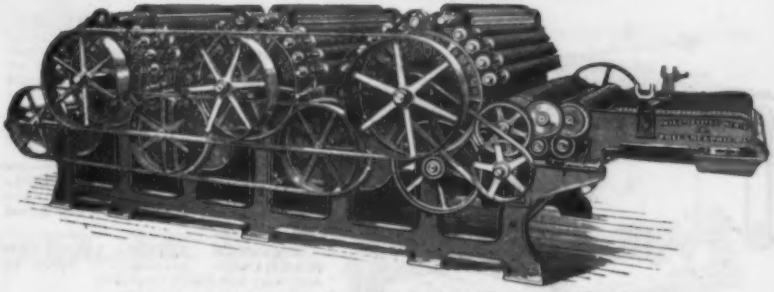
Carbonizing Machines. Yarn Scourers.



Automatic Stock Dryer.

GARNETT MACHINES,

BREASTS, BURRING MACHINES,
FEED ROLLS, LICKERS-IN. . . .



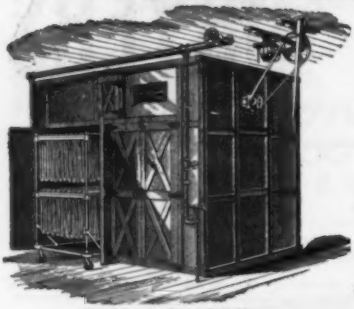
Proctor Improved Double Fancy Garnett Machine.

PHILADELPHIA TEXTILE MACHINERY CO.,

2750-60 Hancock St.,

PHILADELPHIA, - - - PA.

"HURRICANE" DRYERS



TRUCK YARN DRYER.

—FOR—

WOOL, COTTON STOCK, YARN, STOCKINGS, UNDERWEAR, &c.

CARBONIZERS,

Yarn Scouring Machines.

"HURRICANE" FANS

for Ventilating and Drying.

Best in Construction. Lowest in Price.

Plans, Estimates and Catalogues cheerfully furnished.

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"ALL SHEAVES LOOK ALIKE TO ME."

DO THEY?

JUST ASK US ABOUT OUR

Machine-Moulded Sheaves.

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PHILADELPHIA; LINK-BELT ENGINEERING CO.

OSWALD LEVER,

Formerly LEVER & CRUNDY

BUILDERS OF

TEXTILE MACHINERY.

FILLING COP WINDING MACHINES. Spindles driven by belts or by gears. To wind cops. Cops to weave from the inside, or butts to weave from the outside. Can be made to wind any kind of filling from the coarsest to fine numbers. These machines will put the most yarn in as given size of shuttle than any other machine in use.

BANDLESS SPINDLE SPOOLING MACHINES. Adapted to the finer grades of yarn and to the finest silk.

PRESSER DRUM SPOOLING MACHINES. Arranged to spool in any way the trade requires.

BANDLESS VARIABLE SPEED MACHINES. To wind the large bobbins used in knitting mills.

CONICAL and STRAIGHT TUBE WINDING MACHINES.

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Beaming Machines, Sectional Warp Mills, Chenille Cutting Machines, Reeling Machines to prevent waste at the bottom of mule bobbins.

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Fabric Measuring and Packaging Co.

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Midnight Fast Black

„Amisilk"

Pickaninny Fast Black

Accurate Measurement. Print Measurement and Trade Mark Automatically Every Yard.

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ON COTTONS, WOOLENS, CARPETS (Single and Double Widths.)

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PAID UP LEASES ISSUED.

A PERFECT PIN TICKET

For Cloth Samples and Garments.

Easily and quickly applied to fabrics of any weight.
Securely attached and yet easily detached if necessary to remove.
The machine does the whole thing.
It is cheap, serviceable and durable.

We also make a machine which

PRINTS the TICKETS as they are attached if desired.

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ST. JOSEPH. MICH

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SILK MACHINERY

AND

CUTTERS OF RIBBON, TICKER AND BEAMING PAPER.

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MANUFACTURED BY

Victor Shaw Ring Traveler Co.

Incorporated 1899

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WOOD-RIM PULLEY

With Iron Hubs and Arms.

HEAVY SINGLE ARM PATTERN.

This illustration shows our heavy single arm pulley. The one selected for this cut was 48″ in diameter, with a face 15″ in width, and strong enough for a three-ply belt. The rims are built either split or solid with clamp hubs.

CHASE PULLEY COMPANY,
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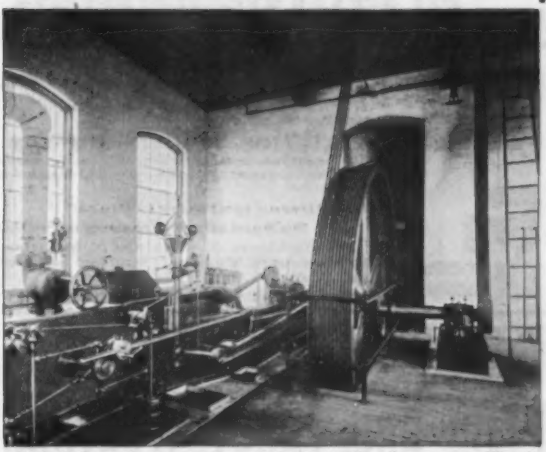
ENGINEERS, FOUNDERS, MACHINISTS,

DESIGNERS AND BUILDERS OF

Modern Textile Mill Equipments.



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LATEST IMPROVED
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HIGHEST EFFICIENCY
In Power Transmission
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The "DODGE"
AMERICAN
SYSTEM ROPE
TRANSMISSION.

CAPILLARY SELF-OILING BEARINGS—Oil Economizers.

IRON CENTER WOOD RIM TEXTILE PULLEYS—Designed especially for Textile Mill Work.

COUPLINGS—in variety.

SAFETY IRON CENTER WOOD RIM FLY WHEELS. IRON SPLIT AND SOLID PULLEYS, SHAFTING, ETC.

We have a large engineering force and will be pleased to assist you in the determining of your requirements in our line upon receipt of letter stating just what you desire to accomplish. Address nearest office.

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Every Mill Man
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a unique publication in trade literature exclusively devoted to
MODERN POWER TRANSMISSION ENGINEERING
Copiously illustrated with typical installations. Other articles of interest to the up to date factory are also contained in each issue. Sample copy free by applying to
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BRANCHES ~ BOSTON NEW YORK CHICAGO CINCINNATI ATLANTA LONDON, ENG.

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Entire Outfits for New Mills, or small and odd items that you don't know just where to obtain, can be found at the

AMERICAN SUPPLY CO.
PROVIDENCE, R. I.

in Mill Supplies.

E. Dixon. Established 1876. F. M. Dixon.

DIXON LUBRICATING SADDLE CO., BRISTOL, R. I.

Sole Manufacturers of

Dixon's Patent Locking Saddles and Stirrups

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

The Stirrup is always in place.

No bent stirrup resting on rolls.

Manufacturers of all kinds of **Saddles, Stirrups and Levers.** Send for Samples and Prices.

Spinners' Supplies in general.

KILBURN, LINCOLN & CO.,

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MAKERS OF

Looms for Plain and Fancy Weaving.

Represented in the South by SEXTON & ROBBINS CO., CHARLOTTE, N. C.

SPINDLES AND FLYERS.

For Cotton, Woolen, Worsted, Silk and Flax Machinery.

Also Steel Caps, Bolsters, Steps, Tubes, etc.

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Successor to E. A. Leigh & Company,

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Cotton, Woolen and Worsted Machinery

For All Classes of Work.

MATHER & PLATT'S Dyeing and Finishing Machinery.
JOSEPH SYKES BROS.' Card Clothing for Cotton.
CRITCHLEY'S Card Clothing for Woolen and Worsted.
GEORGE HODGSON, Ltd., Looms for Worsteds, etc.

WATSON'S

HEDDLE FRAMES.
WIRE HEDDLES.
TEMPERED STEEL WIRE STRIPPER CARDS.

ADDRESS L. S. WATSON MFG. CO., LEICESTER, MASS. FOR THE VERY BEST MADE

MORLEY RING

SPINNING

TWISTING

TRAVELERS

MORLEY BUTTON M'F'G CO.,

68 Essex Street,

BOSTON, MASS.

BIRCH BROS.,

Somerville, Mass.

Mill Sewing Machines.

Sews any fabric, wet or dry, thin or thick fine stitch or coarse stitch.

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Bleaching, Dyeing and Finishing Machinery.

ESTABLISHED, 1873.

WHITINSVILLE SPINNING RING CO.

Our Patented Specialties.
DOUBLE RIBBED RINGS, U.S.
STANDARD TRAVELER CLEANERS.
METALLIC BURNISH LIKE
THAT PRODUCED BY
THE TRAVELER.

WHITINSVILLE, MASS. U.S.A.

NATIONAL RING TRAVELER CO.

—MAKERS OF STANDARD—

SPINNING AND TWISTING TRAVELERS

OF EVERY DESCRIPTION.

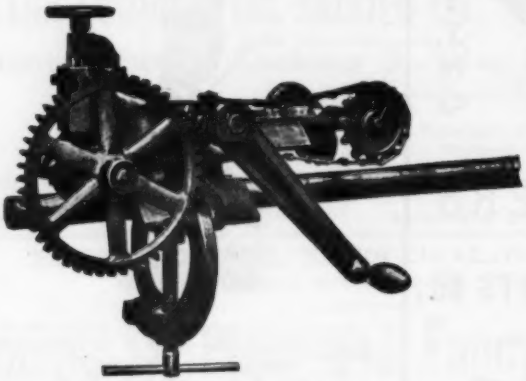
PROVIDENCE, - - R. I.

A. CURTIS TINGLEY, Treasurer.

LOOM REEDS OF EVERY DESCRIPTION.

LEICE REEDS,
GUIDE REEDS,
SLASHER COMBS,
HEDDLE RODS, ETC., ETC.

NOTE:—Our Portable Key Seater will enable you to cut your Key Seats on any size shafting during the noon hour, and without removing the shafting from the hangers.



Patented, July 23, 1895.

John Leisenring Manufacturing Co.,
Belmont and Elm Avenues,
PHILADELPHIA, PA.

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Sole Manufacturer in United States of
BRASS AND STEEL MAILS
Liberal Discount to Dealers.

Send your next order for **LOOM HARNESS** to us.

THE "JEFFERY" HARNESS

Is the most durable made and will please you.

Finished with
CALMAN'S L H. ENAMEL.

HENRY JEFFERY LOOM HARNESS CO.,
WOONSOCKET, R. I.

Something New In Heddles!!

A Heddle Made Out of One Piece of Steel.
No Twist in the Eye.
Cheaper Than Imported Heddle.
Patented.

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Warren Brothers Company

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Coal Tar and Asphalt Roofing and Paving Materials, Varnishes, Etc.

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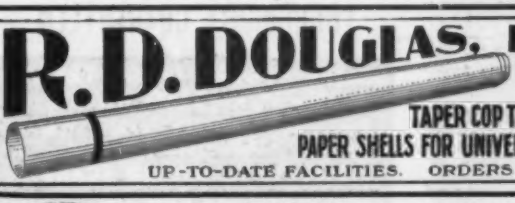

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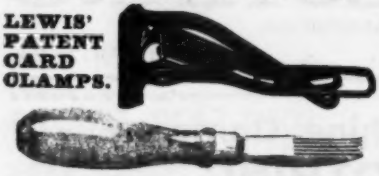

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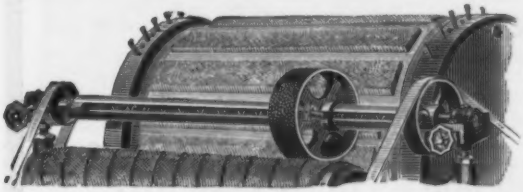

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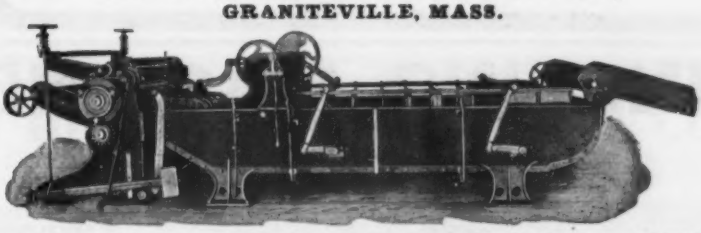

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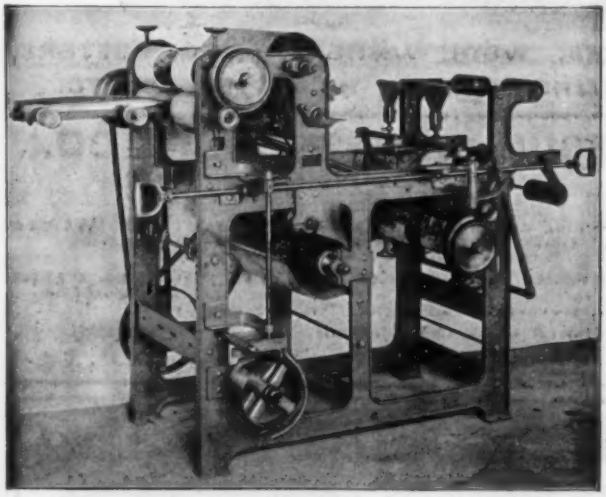

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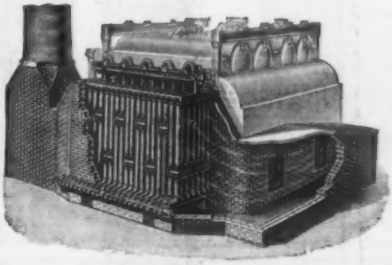

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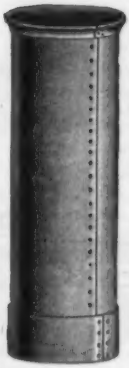

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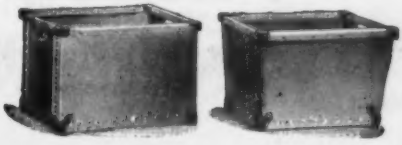

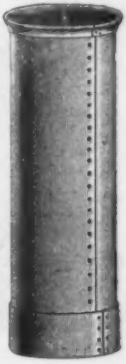

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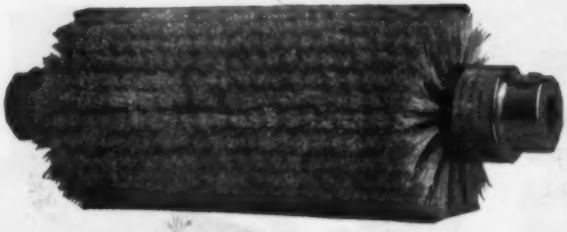

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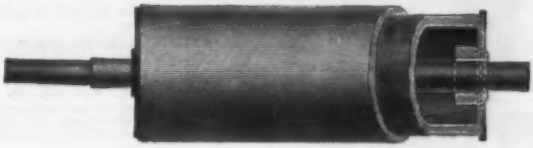

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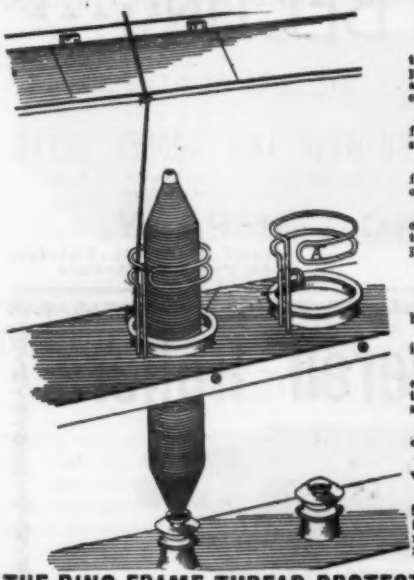

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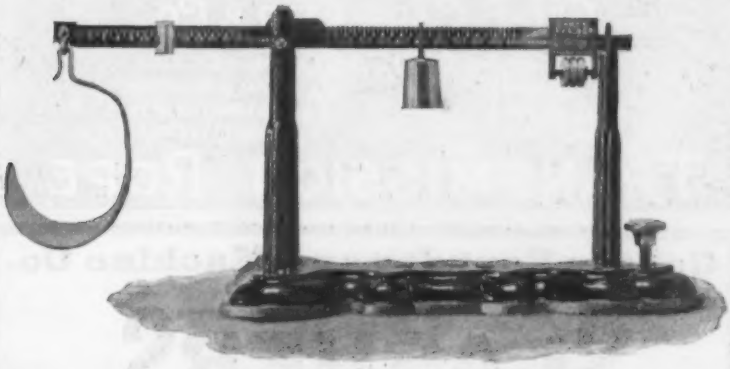

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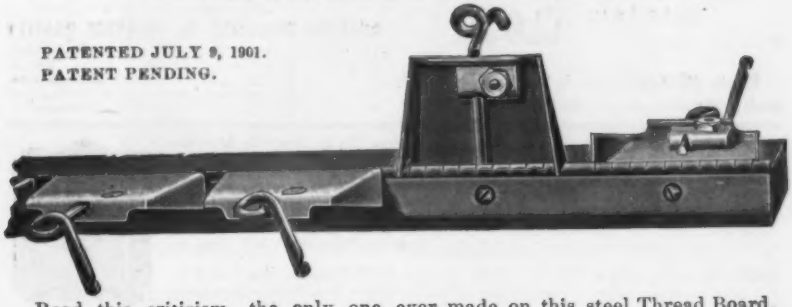

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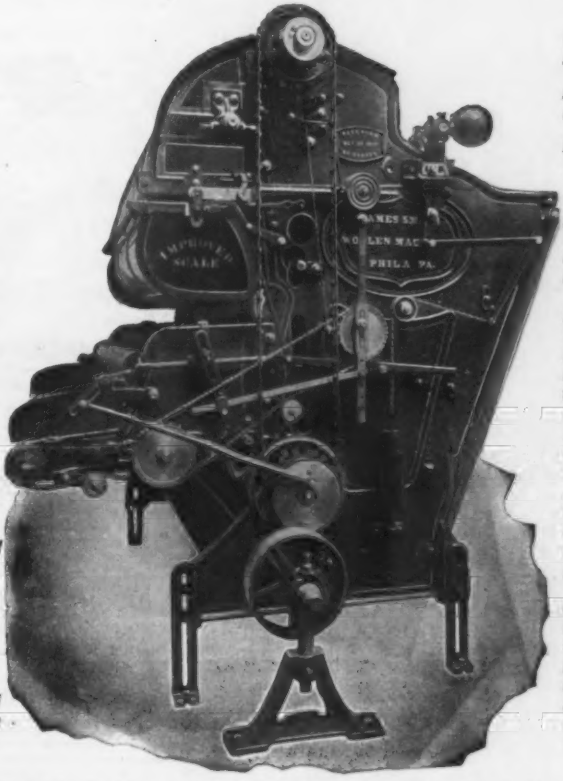

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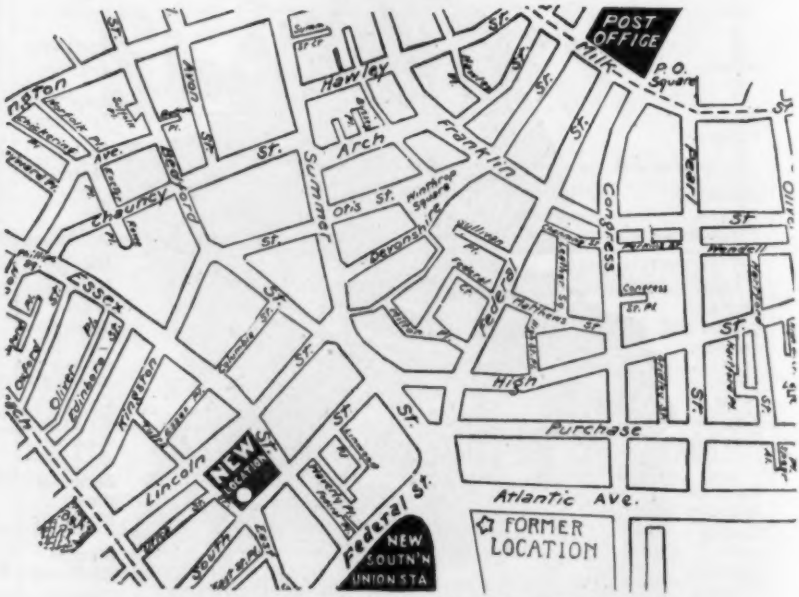

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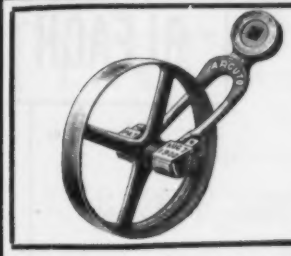

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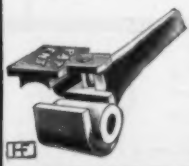

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List of Textile Patents.

Issued October 29 November 5, 12 and 19, 1901.

Card Feeding and Weighing Mechanism. 686,072. James Hogg, Amsterdam, N. Y., assignor to the American Card Feeding Co., Amsterdam, N. Y.

Dyeing Machine. 685,690. John H. Steadwell, Amsterdam, N. Y., assignor to the Steadwell Dyeing Machine Co., Amsterdam, N. Y.

Drying Apparatus. 685,243. Leonard Atwood, Philadelphia, Pa.

Drying Apparatus. 685,287. Alexander P. Mende, New York, N. Y.

Dyeing Machine. 685,910. Gustave de Keukelaere, Brussels, Belgium.

Feeding Mechanism for Carding Machines. 686,071. James Hogg, Amsterdam, N. Y., assignor to the American Card Feeding Co., Amsterdam, N. Y.

Knitting Machine. 686,806. Geo. W. Cummings, Cohoes, N. Y.

Loom Shuttle. 686,555. D. Sussmann, Paterson, N. J.

Loom. 686,060. Henry L. Harriman, New York, N. Y. and Louis Bell, Brookline, Mass.

Mercerizing Machine. 685,889. Charles L. Weichelt, Philadelphia, Pa.

Machine for Finishing Cloth. 685,951. Henry S. Smith and Andrew Thomson, Bradford, Eng.

Machine for Making Tufted Fabrics. 686,738. John Kaschenrath, Wilkesbarre, Pa., assignor of one-half to Christian E. Spoerl, Wilkesbarre, Pa.

Process of Producing Knit Goods. 686,967. Bernard F. Steber, Utica, N. Y.

Roller Employed in Spinning Textile Fabrics. 686,767. Geo. A. Ryder, James H. Crabtree and Charles S. Lees, Bolton, Eng.

Selvage-Heddle Frame. 686,569. Thomas D. Wilmarth, Saundersville, Mass.

Spiral Shearing Knife. 686,346. Fritz Schlener, Aix-la-Chapelle, Germany.

Spindle-Plumb. 686,975. Harold Kelley, Biddeford, Me.

Spooling Machine. 686,826. Conrad Mullers, Munchen-Gladbach, Germany.

Stocking. 686,956. Bernard F. Steber, Utica, N. Y.

Shuttle Actuating Mechanism for Looms. 685,857. Emil Monhof, Brooklyn, N. Y.

Twisting Machine. 686,724. Albert Goss, Paterson, N. J., assignor to the Automatic Twisting-In Machine Company, Paterson, N. J.

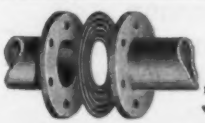
Thread Guide and Thread Guide Support for Spinning Machines. 686,015. Edward Whittum, Providence, R. I. Annie A. Whittum, Fall River, Mass., Administratrix for said Edward Whittum, deceased.

Woven Buckram Frame. 686,993. Herbert H. Shumway, Taunton, Mass.

Warp Tension Mechanism for Looms. 685,521. Virgil E. Morse, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

Woven Chenille Fabric. 685,601. Henry Hardwock, Philadelphia, Pa.

Woven Fabric. 686,230. Charles H. Landenberg, Philadelphia, Pa., assignor to the firm of F. A. Bochmann & Company, Philadelphia, Pa.



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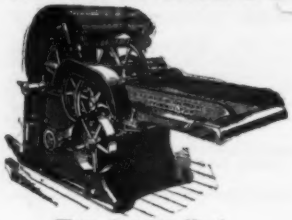

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This machine is provided with steel toothed cock spur feed roller, driven by compound gearing.

The teeth in the cylinder are made of best steel and are securely fastened in their places.

The grate under the cylinder is made of round bars geared together so that they revolve, preventing the grate from choking.

The gears are covered and the machine provided with adjusting screws to take up the wear.

There is a door at the side for the convenient removal of the dirt and to provide draught.

The Picker discharges from the back underneath.

The 40-inch Picker is driven by two belts from a countershaft which accompanies the machine.

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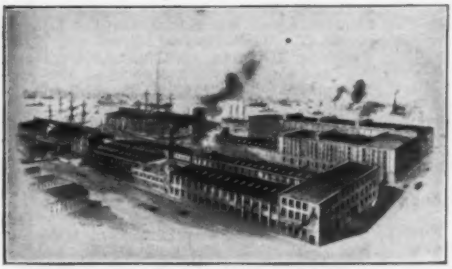

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STEPHEN GREENE.

TEXTILE WORLD.

Vol. XXI. DECEMBER, 1901. No. 6.

STEPHEN GREENE.

The recent death of Stephen Greene, of the firm of Lockwood, Greene & Co., of Boston, came as a sudden shock in textile circles, where no man was more widely known or more highly esteemed. Comparatively few knew of his illness, for although he had been for some months abroad on account of his health, he had since his return given some attention to business, so that his death came as a great surprise and grief to his friends and business acquaintances.

His illness was brought on directly by overwork. The pressure of business in the past few years had been very great. The firm had its full share of the planning and supervision of the many mills erected all over the country, and particularly in the South, and Mr. Greene, although assisted by able heads of departments, gave much of his personal attention to the important phases of the work. He died in the very prime of life, yet having reached the front rank of his profession.

Mr. Greene was born in Hope Village in the town of Scituate, R. I., September 27, 1851. He was the son of Alvin and Maria Arnold Greene. His father was a cotton manufacturer, having worked his way up from a boy in the mill until he became a mill owner. His ancestry is of English descent, being among the first settlers in Warwick, R. I. One member of the family was General Nathaniel Greene of revolutionary fame.

As a boy, Mr. Greene attended public schools in Westerly and fitted for Brown University, from which he graduated in 1873 with a degree of bachelor of philosophy. While attending school and while preparing for college, he worked in his vacations and all spare time in his father's cotton factory, beginning at the early age of ten, so that cotton manufacturing was a feature of his life from his boyhood.

After graduating from college, he engaged with the firm of N. B. Schubarth & Co., of Providence, civil engineers, and in 1875 left them for employment with the firm of D. M. Thompson & Co., at that time a leading firm of mill architects and engineers, and with whom a number of our leading mill architects and engineers received their first training. The following year he entered the employ of Thomas J. Hill, as superintendent of construction for the new Elizabeth Mills, then being built at Hills Grove, R. I. These mills were nearly three years in building, and the experience gained there in all branches of construction and practical supervision of the work was of great benefit.

In November, 1879, he made a connection with A. D. Lockwood & Co., of Providence, an old established firm of mill engineers and architects. Mr. Lockwood was not only an engineer, but a successful cotton manufacturer, and had a wide following and large clientage. On March 1st, 1882, the firm of Lockwood, Greene & Co. was formed, which has ever since been continued. From Mr. Lockwood's death in 1884, Mr. Greene managed the business, and from January 1st, 1890, was sole partner.

The firm of Lockwood, Greene &

Co. really dates back in direct succession over 75 years, when David Whitman originally established what was probably the first office for mill engineering work. Mr. Lockwood succeeded him, and then followed Lockwood, Greene & Co., which was originally composed of Messrs. Amos D. Lockwood, J. W. Danielson and Stephen Greene, so that there is a direct succession.

In 1886 the Ocean Mills at Newburyport, Mass., were bought by a syndicate of capitalists, and Mr. Greene was asked to become treasurer and manager of the plant, whose name was changed to the Whitefield Cotton Mills. The offices of Lockwood, Greene & Co. were removed to Newburyport, and while Mr. Greene retained his connection with the Whitefield Mills the business was done there. When the Whitefield Mills were moved South, the business of Lockwood, Greene & Co. was removed to Boston, where it has since been located.

At the time when Northern manufacturers had not fully appreciated the importance of Southern competition in certain lines of goods, Mr. Greene recognized the advantages possessed by the South, and became satisfied that machinery employed on the class of goods made at the Whitefield Mills could be operated to better advantage in the South. Acting on the strength of his conviction, the machinery in the Whitefield Mills was moved bodily to the South and set up in the Spartan Mill. This was, we believe, the pioneer act in the removal of a complete Northern cotton mill to the South. The subsequent success of the Spartan Mill made the original investment in the old Ocean Mill plant a satisfactory one.

In other lines of his profession Mr. Greene was far sighted, and never hesitated to adopt a new idea because it was new, provided he had become convinced of its practical value. Thus he was one of the first engineers in this country to advocate the use of rope driving in place of belts. He was also the first to advise the use of electric transmission of power for cotton mills, and with the co-operation of the owners, had the opportunity for directing on a large scale the first application of it in that line for the Columbia Mills Co. at Columbia, So. Carolina. This has been followed by numerous other large installations of electrical power by his firm both north and south in various manufacturing lines.

Indeed, the modern development of mill construction and equipment has been contemporaneous with the progress of this firm. Mr. Greene's early experience and practical acquaintance with the manufacturing business enabled him to grasp the problems which were constantly arising from the practical standpoint of a manufacturer. He had, to a rare extent, the peculiarity of inspiring confidence and respect on first acquaintance, and the longer one knew him, the more these impressions were strengthened. His clients felt that their interests were safeguarded in his hands.

During the past few years the firm has largely extended its field of work, and the volume of business had in 1899 necessitated their removal to new quarters at 93 Federal St., where they occupy the entire sixth floor of a large building, having fitted it up in every improved detail for the transaction of their business, now giving employment to over 50 assistants and clerks and draughtsmen. Although originally confining their work almost entirely to textile establishments, it has now broadened out to take in all kinds of industrial plants, among more recent work of this character being a large Locomobile plant at Bridgeport, the American Tobacco Co., Richmond, Va., new works of the B. F. Sturtevant Co., Atlas Tack Co., and others. The list of the textile mills for which they have been architects and engineers is a long one, too extended for reproduction here, and embraces many of the largest and

most modern plants North and South. In looking over the list of their mills, one cannot fail to be impressed by the fact that almost without exception these have been successful plants.

The extent of the business may be realized when it is known that Lockwood, Greene & Co. have built mills in the south alone aggregating in wholly new construction or enlargements to existing plants about 2,000,000 spindles, or nearly one-third of the present spindle capacity of the South. This is in addition to what may be almost an equal amount of construction in other parts of the country, and many bleacheries, dye works and finishing establishments.

Mr. Greene was a director in the following concerns in South Carolina: The Pacolet Manufacturing Company of Pacolet, Spartan Mills of Spartanburg, Lockhart Mills of Lockhart, Gainesville Cotton Mills of Gainesville, Ga., Laurens Cotton Mills of Laurens, the Abbeville Cotton Mills of Abbeville, and Soule Mills, New Bedford, Mass. He was also a director in the Cotton and Woolen Mutual Fire Insurance Company of Boston, the Merchants' Mutual Fire Insurance Company and the Blackstone Mutual Fire Insurance Company of Providence.

Mr. Greene was a member of the Phi Beta Kappa Society, Brown Chapter; the Exchange Club of Boston and the Neighbors' Club of Newton Centre. He was also trustee of Boston Baptist Social Union, the Massachusetts Homeopathic Hospital, Brown University, Providence, R. I., Worcester Academy, Worcester, Mass., and Newton Theological Institution, Newton Centre, Mass., and was president of the American Baptist Home Mission Society from 1897 to 1900.

Dec. 15, 1874, he was married in Providence to Natalia L. Schubarth. Their family consists of four sons: Edwin Farnham, Stephen Harold, Everett Arnold and Frederick Hartwell Greene.

Mr. Greene had so organized his business that the work will be continued without interruption. His son, Mr. E. F. Greene, was educated with the special purpose of following in his father's footsteps, and will continue the business along the same lines, retaining the different heads of departments, in whose charge the work has largely been during the past few years.

Outside his business life, Mr. Greene was an active worker in religious and educational circles. In the churches in Providence and Newton Centre, where he resided, of which he was successively a member, his influence was of the greatest assistance and help, and his loss will be keenly felt by the many educational and religious societies with which he was connected, while in textile circles he will always be remembered as one of the representative men of his time.

THE SHODDY BILL.

The wool growers are much interested in the proposed law to require cloth to be plainly marked to show the proportions of wool, shoddy and cotton which it contains. A bill for this purpose has been framed and will doubtless be presented at the coming session of Congress.

To any one at all acquainted with the material known as wool and shoddy, and with the methods of manufacturing these materials into cloth, the proposition to thus label them is so impracticable as to deserve no notice.

A large number of people, and among these are found many newspaper writers, are densely ignorant of what is meant by such terms as shoddy, mungo, noils, flocks and wool waste. It is for this reason that we may expect to see this "shoddy bill" receive strong support.

The supporters of this bill are sincere in their belief that its provisions are feasible and that its enforcement would result in benefit both to

the consumer and producer of wool; to the first by clothing him in cloth made from "pure wool"; to the second by increasing the use and incidentally the price of wool.

The one fact which makes such a law impossible of enforcement is that there is no certain means at present known by which shoddy and similar wool substitutes can be distinguished from wool, when manufactured into cloth.

Shoddy is wool which has been subjected to some process of manufacture and subsequently torn up to convert it into a fibrous mass. The fibre is thus shortened, but this affords no means of distinguishing remanufactured stock from new wool, as the length of new wool fibre varies so widely. Wool growers shear their sheep twice a year in many sections of the country. The staple is thus shortened and a fibre is produced which is inferior to much of the so-called "shoddy." If the buyer of cloth is to be warned against a wool fibre shortened by a picker or a comb, why should he not be warned against a wool fibre shortened by the sheep shears of the wool grower? One warning is as easy to give as the other. Both are impossible. A law whose enforcement is impossible accomplishes nothing except to bring all law into contempt.

We call the attention of the supporters of this shoddy bill to an extract from a French work of high authority, printed elsewhere in this issue, in which are given the various tests used for distinguishing different fibres in cloth and yarn. No reference is made to determining the presence of wool shoddy and waste because such a thing is impossible.

Before asking for a law to compel the "tagging of shoddy goods," let the supporters of this bill await the discovery of some means by which shoddy can be distinguished from wool.

FOREIGN TRADE AT OUR DOORS.

The imports of cotton goods into the Philippines during the ten months ending with last April were at a rate of nearly ten million dollars per year, or to be exact, $9,861,416.

This is more than the value of our yearly exports of cottons to China, about which we have bragged so much and which in the seven months ending last July were at the rate of $8,934,317.

The value of the goods purchased by the Philippine Islanders is nearly 40 per cent. of the value of all cotton goods exported from the United States.

Of all these cotton goods brought into the Philippines a beggarly $82,575 worth was furnished by our cotton mills—just one per cent. of the total.

The following table will show the share of each country in this trade:

From.	Total.	Per Ct.
United States	$ 82,575	1
Great Britain	4,229,048	51½
Germany	586,820	7⅛
France	129,109	1⅝
Spain	1,019,620	12⅜
Italy	94,780	1⅛
Austria	11,384	⅛
Belgium	105,510	1¼
Denmark	8,100	
Netherlands	96,260	1¼
Switzerland	655,384	8
China	154,127	1⅞
Hong Kong	238,349	2⅞
Japan	138,504	1¾
British E. Indies	651,126	7⅞
Danish E. Indies	8,010	⅛
Australasia	1,324	
Russia	3,817	
Total	$8,217,847	100

These cotton goods imported into the Philippines in these ten months were divided as follows: Cloths, $3,877,282; loosely woven muslins, $2,232,098; yarn, $1,021,452; wearing apparel, $674,555; all other, $412,460; total, $8,217,847 (or at the yearly rate mentioned, $9,861,416).

Here is a country where the American merchant should stand upon even terms, at least, with his foreign competitor, and it behooves him to be about it!

THE RECIPROCITY CONVENTION

This convention has come and gone, and if it has accomplished nothing else it certainly demonstrated clearly that reciprocity is but another name for tariff revision.

Reciprocity as an abstraction, a dream, received the unanimous approval of the convention, but when definite propositions for the reduction of duties were proposed, the same determined resistance by the affected interests was shown with which the country has been made familiar by out and out tariff agitation in past years.

Resolutions were passed as follows:

WHEREAS, The growth of manufactures in the United States, represented in values and in round numbers, has been as follows:

1850	$1,000,000,000
1860	2,000,000,000
1870	4,000,000,000
1880	5,500,000,000
1890	9,000,000,000
1900	15,000,000,000,

and

WHEREAS, These figures exhibit at the same time (1) A splendid result for the past industrial policies of our Government—and (2), a growing need for the development of larger markets in foreign countries; and

WHEREAS, It would seem desirable not only to maintain policies under which such splendid results have been accomplished but also devise means to develop increased markets for the increased and increasing manufacturing products; therefore be it

RESOLVED—(1.) That this convention recommends to Congress the maintenance of the principle of protection for the home market and to open up by reciprocity opportunities for increased foreign trade by special modifications of the tariff, in special cases, but only where it can be done without injury to any of our home interests of manufacturing, commerce or farming.

RESOLVED—(2.) That in order to ascertain the influence of any proposed treaty on our home interests, THIS CONVENTION RECOMMENDS TO CONGRESS THE ESTABLISHMENT OF A RECIPROCITY COMMISSION, which shall be charged with the duty of investigating the condition of any industry and reporting the same to the Executive and to Congress, for guidance in negotiating reciprocity trade agreements.

WHEREAS: The present and increasing magnitude of the aggregate manufacturing and commercial interests of the United States have become far too great to be adequately handled by any of the existing Government Departments; and,

WHEREAS: Changing phases of these great interests are constantly bringing new and important questions, the proper determination of which would require all the work of a Department fully organized and equipped; therefore, be it

Resolved—(1.) This convention recommends and requests that a new department be created to be called "The Department of Commerce and Industries," the head of which shall be a member of the President's cabinet.

Resolved—(2.) That a reciprocity commission be created as a bureau of this new department.

These resolutions contain but two definite propositions; the reference of the whole reciprocity question to a commission and the creation of a new Government Department of Commerce and Industries.

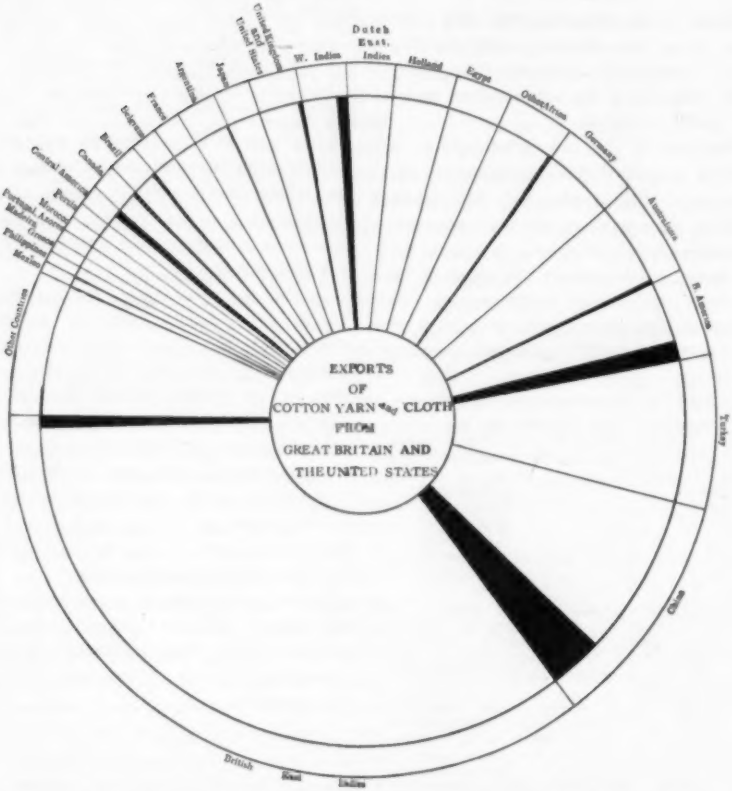
Unable to agree upon the pending treaties or to recommend any definite course for the negotiation of new treaties, both the friends and the enemies of reciprocity voted for reference of the subject to a commission. The advocates of reciprocity favored a commission as the best that could be secured. The opponents favored this reference as an easy and effectual smothering of the agitation for tariff reduction under another name.

The recommendation to create a new department of the government although a good thing in itself has but a remote relation to reciprocity and was harmless.

—The U. S. Consul at Chemnitz, reports a recent transaction between a German firm and one in Chile, in which the Germans secured an order for cotton yarn on cops. The Chilian firm for a number of years before that had obtained their yarn from England. The consul states that the success of the Germans in securing foreign trade may be due to the longer credit they give. He adds that they have an exact knowledge of the market and the individuals with whom they are dealing, and that the American system of quoting f. o. b. New York, Philadelphia, Boston, etc., is a serious drawback to our foreign trade.

—The climate of Cordoba in the Argentine Republic is said to be very favorable for silk raising, and it is reported that a French establishment has offered to purchase all the silk that the province produces at 10 pesos for 10 kilograms of cocoons.

THE AMERICAN INVASION.



Exports of Cotton Yarn and Cloth from Great Britain and the United States. Receiving countries marked on border. White represents exports from Great Britain. Black represents exports from the United States.

It is no exaggeration to say that the nations of Europe are in a state of alarm, bordering in some quarters on panic, over the invasion of their markets by the merchants and manufacturers of the United States.

Foreign journals are filled with comments on this question, calling attention to the progress already made by this country in displacing their products in markets which have heretofore been considered securely their own. The excitement is by no means confined to the press. Not many weeks ago a large mass meeting was held in Vienna to protest against the sale of American shoes in that Austrian capital and to advocate a boycott against American goods.

Speeches and resolutions could not satisfy this throng. The crowd resolved inself into a mob, which was dispersed by the police while headed for the Reichsrath to demand of the government that instant action be taken to drive the hated American goods from the country.

Not only are the people and the press of Europe aroused over this question of American industrial competition, but foreign statesmen, the wisest scholars and closest observers of world-wide movements in the affairs of mankind view with the greatest concern the appearance of American goods in foreign markets. They

look upon the progress now being made by this country in securing foreign trade as the beginning of an era in the world's history in which the centre of industrial and commercial activity and consequent political preponderance will be transferred to that great section of North America which has been made by nature the best adapted of all the world's surface for the support of man.

A vast territory, facing on the two great oceans, possessing an unequaled soil and climate, America is the centre of the industrial and commercial world of the future. If the reader thinks this picture overdrawn let him look at a map of the world.

The American people are prone to take to themselves the credit for a large share of America's development, but the enterprise, intelligence and vigor of the people are not the causes, they are the effects of America's greatness. The human toiler in Europe, Asia or Africa finds himself face to face with a hard struggle to obtain the bare means of subsistence. He comes to America. He finds nature responding freely to his demands for food and clothing. Under these stimulants he forgets his former low estate, and when the rich gifts of nature come to him he cries, I am an American! See what I am doing!

His former fellow countrymen look upon him with terror as an invader. It is the history of the proud fly on the chariot wheel, repeating itself.

America is great because of the design or the chance in the great geological upheavals which formed the solid part of the earth's surface in the form and position in which we now find it.

With this sobering thought in their minds our people and the people of other lands will take a more rational view of the present movement of our foreign trade. Its growth is inevitable. Let us do what we can to aid its progress which no one can prevent.

Our cotton industry has been especially favored by nature. Two-thirds of the cotton used throughout the world is raised in America. We supplied to foreign mills in the year ending last June, raw cotton valued at more than $300,000,000. Other nations take this cotton from America because they must have it for clothing their people and can get it nowhere else. Nature produces only in America sufficient cotton with which to clothe mankind.

Our exports of cotton cloth and yarn are, however, relatively insignificant. This is clearly shown by a comparison of our exports of this class of goods with those of Great Britain alone.

For the seven months ending with last July, the exports of cotton yarn and cloth from Great Britain were valued at $187,512,505, and from the United States at only $11,124,018. The yearly exports at this rate would amount to $321,450,009 from Great Britain, and $19,069,745 from the United States.

For every dollar's worth of cotton yarn and cloth exported from this country Great Britain ships nearly seventeen dollars' worth from her shores.

The value of Great Britain's yearly exports of cotton yarn and cloth ($321,450,009), is slightly in excess of the value of our exports of raw cotton ($313,700,000), in the same time.

Our insignificance in the cotton goods export trade of the world would be still more strikingly illustrated by a comparison of our foreign trade with that of all other cotton manufacturing countries combined. These last named statistics are, however, not available.

If the "American invasion" which is taking place in the iron, steel, leather and other trades of the world is to find its counterpart in the cotton goods trade, it will be effected by displacing the goods of competitors now in possession of the field and of which Great Britain is the chief.

The destinations of the cotton yarn

exported from Great Britain in the seven months ending with July, 1901, are shown in the following table.

EXPORTS OF COTTON YARN AND TWIST FROM GREAT BRITAIN.

To British East Indies	$5,289,245
To Germany	4,380,895
To Holland	3,120,900
To Turkey	1,831,725
To France	1,297,500
To Japan	1,272,230
To all others	6,068,710
Total	$23,261,205

This trade in yarn is entirely untouched by the "American invasion."

The following table shows the destination of the cotton piece goods exported in the same seven months from Great Britain and the United States:

EXPORTS OF PIECE GOODS FROM GREAT BRITAIN.

British East Indies	$63,301,670
China	16,452,060
Turkey	11,611,945
Australasia	7,861,815
Egypt	5,539,320
Dutch E. Indies	4,650,485
United States	3,921,815
Argentina	3,516,895
Germany	3,142,645
Belgium	2,546,920
British W. Africa	2,401,485
Brazil	2,377,750
Japan	2,338,875
Chile	2,276,045
Foreign W. Indies	2,152,725
Holland	2,107,650
Canada	1,901,030
British S. Africa	1,879,440
Colombia	1,819,070
Foreign W. Africa	1,583,500
Persia	1,522,570
Morocco	1,415,130
British and German W. Indies and Guiana	1,395,620
France	1,336,200
Central America	1,155,860
Portugal, Azores and Madeira	1,155,525
Greece	1,153,450
Philippines	1,109,790
Venezuela	1,071,870
Peru	911,790
Uruguay	795,125
Mexico	717,290
Italy	455,165
Malta	213,125
Austria Hungary	157,470
Gibraltar	78,765
Algeria	24,785
All other	6,185,630
	$164,251,300

EXPORTS OF PIECE GOODS FROM UNITED STATES

British E. Indies	$ 181,646
China	5,211,686
Corea	185,614
Australasia	218,707
Great Britain	383,319
Argentina	65,717
Germany	32,547
Brazil	169,629
Japan	16,146
Other W. Indies	541,314
Canada	317,920
Africa	210,048
Colombia	764,692
San Domingo	161,490
France	309
Central America	442,184
Philippines	16,524
Other S. America	911,028
Mexico	131,939
Hongkong	28,995
Other Europe	73,534
All others	1,059,031
	$11,124,018

The volume of exports of both yarn and piece goods from each of the two countries, Great Britain and the United States, is shown in graphic form by the following chart in which the white portion represents Great Britain's share and the black portion shows the extent of the invasion of American cotton goods in the different parts of the world. May this shadow never grow less.

We see here how slight an impression American cotton goods have made in foreign markets. Selling manufactured cotton goods abroad is very different from selling the raw material.

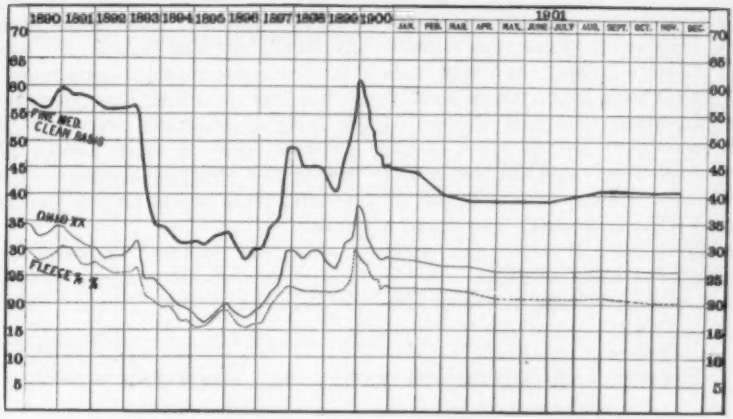
The fibre, the product of the soil and the sun is picked from the plant baled and loaded on vessels bound for foreign parts. The manufactured goods require human labor which other nations can supply in greater quantity and of as high a quality as ourselves.

A study of this chart will show where the world's purchasers of cotton goods are to be found. To place American goods with them requires patient, systematic and persistent effort of individual merchants and manufacturers. The languages, customs, habits, needs and whims of the foreign consumer must be learned. Goods must be made to correspond and the prices must be as low if not lower than those of the nations now in possession of the market.

Only in this way can the black portion of the chart be enlarged.

—The only reproaches by which we profit are the ones we address to ourselves.—Ravignan.

WOOL MARKET.



WOOL MARKET.

Business is active in the wool market, and during this last eight weeks a large volume of wool has steadily moved from the dealers' storehouses to the mills.

The mills are generally well supplied with orders, the worsted mills in particular having their production sold ahead for months.

This activity in the goods market is reflected in the free movement of the raw material. It is especially noteworthy that the improvement in the wool business has not yet been accompanied by speculation. Dealers, while as eager as ever to secure profits, have not resorted to the hip, hip, hurrah methods of 1900, which were followed by the prostration of 1901.

One of the chief grounds for the feeling of confidence lies in the comparatively moderate level of prices. Any marked advance in wool values will surely result in restricted operations by manufacturers and the increased use of cheap wool substitutes.

Added to the moderate values prevailing is the assurance that no tariff changes will be made at the coming session of Congress. The cool reception thus far, according to tariff agitation, even when appearing under so alluring a guise as reciprocity, is a very strong indication that the Dingley wool schedule is secure for the present.

The transactions in the wool market have been made up largely of purchases by the smaller mills whose managers generally confine their operations to actual needs. This is an indication that with the continuance of an active goods market the mills will be forced into the wool market, and thus wool values will continue strong.

The Carpet Wool Outlook.

The situation in carpet wools today is peculiar. The market is very strong and will so continue even in the face of the recent reduction in carpets. This steadiness in the midst of unfavorable conditions is easily accounted for in this country, being due to the fact that the visible supply here is limited, there being even a poorer selection now than there was a month ago.

There are several reasons for the comparative scarcity of these wools, and particularly of the better grades. During 1900 and since that time very little has been imported in the regular channels of trade.

Previous to 1897 (four years ago) Marseilles was one of the great centres for carpet wools and one of our chief sources of supply for Russian and Eastern wools, but since then conditions have arisen which make it less important. The bulk of the Persian wools are sent to ports on the Black Sea from Askabad, Baku and Tiflis, where much of it is picked up by Russia and Turkey, who make a large proportion of their army cloths in the government factories.

The recent troubles in China have also been a factor in bringing market conditions of carpet wools to the present position. Even at best the transportation in China is poor, for when the rivers are closed to navigation in the winter it is well nigh impossible to bring merchantable products to the coast, so there is small wonder that during the convulsed condition of the country there should be little exportation.

It is not strange, therefore, that prices here should continue to range strong.

EXPORTS AND IMPORTS OF RAW WOOL, YARN AND WASTE.

Lbs. in units of one million. Value in units of $100,000.

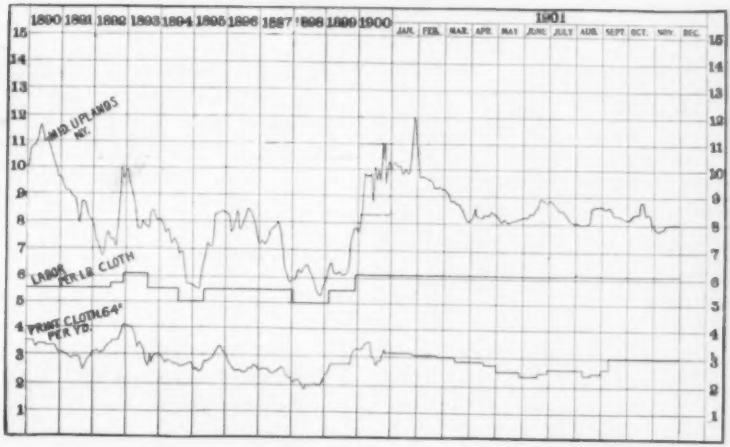
Year Ending June 30.	Exports.		Imports.					
	Wool.		Wool.		Shoddy, Noils, etc.		Yarn.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
1890	.231	.335	106.3	152.6	5.0	20.5	3.5	19.9
1891	.291	.394	129.3	182.4	1.2	4.3	2.0	11.9
1892	.202	.306	148.7	196.9	.3	.9	1.3	7.5
1893	.091	.148	172.4	210.6	.3	1.1	1.2	6.9
1894	.520	.906	55.2	61.1	.1	.5	.5	3.6
1895	4.289	4.844	192.8	229.9	14.1	19.8	2.4	11.7
1896	6.945	8.559	228.4	315.0	18.7	26.5	2.0	10.5
1897	5.271	6.199	366.6	567.5	49.9	69.3	1.8	9.6
1898	.121	.180	132.8	167.8	3.3	6.9	.3	1.9
1899	1.663	2.373	76.7	83.2	.3	.7	.2	1.1
1900	2.200	3.872	155.9	202.6	.4	.9	.2	1.3
1901	.200	.240	104.0	125.2	.6	1.8	.2	1.5
July	.003	.003	10.2	10.53	.03	.10	.02	.16
August	.001	.001	12.7	14.40	.007	.02	.02	.18
Sept.	..	..	31.6	32.1	.003	.01	.02	.14
Oct.	.001	.002	10.4	11.2	.002	.05	.01	.08

EXPORTS AND IMPORTS OF MANUFACTURED WOOLENS.

Value in units of $100,000.

Year Ending June 30.	Exports — Value.						Imports — Value.							
	Carpets.	Dress Goods.	Flannels and Blankets.	Apparel.	Other.	Total	Carpets.	Cloths.	Dress Goods.	Shawls.	Clothing	Knit Goods.	Other.	Total.
1890	.067	..	.409	3.179	.719	4.374	7.5	161.4	242.0	10.1	18.4	19.8	66.2	525.4
1891	.184	..	.265	4.240	.502	5.191	13.7	120.3	182.4	7.2	18.6	12.5	39.7	394.4
1892	.093	..	.244	2.689	.649	3.675	12.9	127.6	164.7	3.5	14.8	11.6	12.1	347.2
1893	.115	..	.242	2.224	.679	3.260	15.8	151.2	164.8	2.8	11.7	14.1	12.0	372.4
1894	2.500	..	.387	3.172	1.685	7.744	9.6	67.6	85.8	1.6	8.6	10.0	7.2	190.4
1895	1.610	..	.498	3.161	1.432	6.701	13.6	163.0	144.0	2.0	10.0	9.4	11.8	353.8
1896	2.252	..	.370	3.653	2.860	9.135	8.9	218.9	199.3	4.5	13.0	25.4	27.4	497.4
1897	1.895	..	.573	3.858	3.150	9.476	7.8	170.1	167.9	4.6	9.8	25.3	27.0	412.5
1898	1.612	.414	.474	4.299	4.074	10.89	17.9	39.6	60.4	.4	7.6	3.9	9.6	139.4
1899	.811	.169	.427	5.388	3.679	10.47	17.6	39.1	59.1	.5	8.3	6.3	5.6	136.5
1900	1.150	.244	1.002	5.654	4.485	12.54	27.5	51.3	58.7	.8	9.9	5.0	6.3	159.5
1901	1.051	.082	1.230	8.060	5.005	15.43	27.0	39.6	53.7	.8	11.7	4.1	8.3	142.2
July	.170	.002	.095	.653	.465	1.39	3.33	6.87	7.11	.04	.90	.78	.51	19.54
August	.029	.014	.351	.576	.582	1.55	2.49	5.00	6.02	1.12	1.12	.99	.42	17.16
Sept.	.054	.004	.027	.560	.435	1.08	2.82	2.98	3.33	.051	3.04	.69	.50	13.41
Oct.	.076	.003	.015	.690	.520	1.30	2.28	2.66	3.58	.095	1.38	.79	.73	11.52

COTTON MARKET.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
MID UPLANDS NY.
LAWNS PER LB. CLOTH
PRINT CLOTHS 64" PER YD.

COTTON MARKET.

The conditions in the cotton market have been unusually quiet. The steadiness of prices was disturbed but little by the advent of the Government report, which, as usual, satisfied the expectations of the extremists on neither bull nor bear side.

And as usual the trade, after perusing the figures, settled down to wait for some better indication of the size of the new crop than the Government estimate.

The foreign market has for many weeks been influenced by reports of a bumper crop, and it is but recently that a contrary sentiment has been in evidence there.

There has been a marked improvement in trade reports from abroad. The domestic market has been fairly steady, although disturbed somewhat by the collapse of the speculative movement in Fall River prints and print cloths. The depression in the domestic market for cheap yarns and cloths still continues. It is the foreign goods market rather than the domestic, however, to which the trade looks for conditions affecting the value of the staple.

The movement of cotton has been free although not equal to that in recent boom years. The world's visible supply as reported by the Chronicle, Nov. 22, was 3,370,287 bales, as compared with 3,289,280 bales on same date last year, 4,039,481 bales in 1899 and 4,635,409 bales in 1898.

—The Board of General Appraisers have upheld the protest in regard to the assessment of duty on ramie noils, and have fixed the rate at 10 per cent. ad valorem, as waste not specially provided for instead of $40.00 per ton as assessed by the collector. The appraisers have also decided that crash, the chief value of which is cotton, the balance being jute, should be assessed at 45 per cent. ad valorem instead of 2 cents per square yard.

—The United States General Appraisers have decided that cotton cloths having openwork stripes and other figures similar to net or netting, certain portions of which bear some resemblance to lace, are not dutiable as laces, lace articles or articles made wholly or in part of lace or in imitation of lace, but are dutiable under the "countable paragraphs" of Schedule 1 (304 to 310, inclusive), with the additional duty of 2 cents per square yard provided in paragraph 313, act of July 24, 1897.

EXPORTS AND IMPORTS OF RAW COTTON AND WASTE.

Lbs. in units of one million. Value in units of $100,000.

Year Ending June 30.	Exports.									Imports.				
	Sea Island.		Other.		Total.			Cotton Waste.		Raw Cotton.			Cotton Waste.	
	Lbs.	Value	Lbs.	Value.	Lbs.	Value	Value. per lb.	Lbs.	Value.	Lbs.	Value.	Value per lb	Lbs.	Value.
1890	9	23	2462	2486	2471	2509	10.15	..	..	8.6	13.9	16.16	..	..
1891	14	31	2893	2876	2907	2907	10.00	..	..	20.9	28.2	13.49	..	..
1892	19	16	2926	2568	2945	2584	8.77	..	..	28.7	32.1	11.18	..	..
1893	8	17	2204	1870	2212	1887	8.53	..	..	43.4	46.9	10.80	1.9	.8
1894	14	29	2669	2080	2683	2109	7.82	..	..	27.7	30	10.83	2.7	.9
1895	15	28	3502	2021	3517	2049	5.82	..	..	49.3	47	9.53	2.9	1
1896	19	38	2316	1862	2335	1900	8.13	..	..	55.3	66	11.93	6	2.1
1897	21	41	3082	2268	3103	2309	7.12	..	..	51.9	59	11.36	5.3	1.7
1898	16	28	3834	2277	3850	2304	5.98	19.1	7.9	52.7	50	9.48	6.7	1.5
1899	14	24	3759	2072	3773	2096	5.55	21.1	8.3	50.2	50.1	9.98	6	2.1
1900	18	30	3082	2388	3100	2418	7.80	38.6	17.7	67.4	79.6	11.81	7.9	2.4
1901	11	22	3320	3137	3331	3137	9.41	50.6	26.3	47.0	68.0	14.45	6.2	1.9
July	.88	1.2	117.5	102.0	118.4	101	8.69	2.9	1.2	7.2	8.5	11.08	.7	.2
August	.13	.30	85.5	71.5	85.6	72	8.41	2.9	1.1	5.3	6.6	12.45	1.8	.4
Sept.	.024	.046	201.1	165.5	201.2	165.5	8.22	2.5	.91	2.3	2.7	11.74	.8	.3
Oct.	.67	1.3	574.	467.1	574.7	465.8	8.18	2.1	.85	3.7	4.2	11.67	.5	.2

EXPORTS AND IMPORTS OF MANUFACTURED COTTONS.

Value in units of $100,000.

Year Ending June 30.	Exports — Value.					Imports — Value.							
	Colored.	Uncolored.	Apparel.	Other.	Total.	Colored.	Uncolored.	Apparel	Laces, etc.	Thread.	Knit Goods.	Other.	Total.
1890	29	55	2	14	100	33.7	1.3	3.4	114.5	9	71.5	65.8	299.2
1891	26	93	3	15	137	42.4	1.7	12	105.9	8.6	67.4	59.2	297.2
1892	25	87	4	16	132	45	1.4	12.6	112.5	6.6	58.3	46.7	283.1
1893	28	63	5	22	118	55.4	2.6	16.8	127.4	7.6	63.9	61.8	335.5
1894	38	76	5	24	143	33.8	1	16.6	80.2	3.3	43.6	45	223.5
1895	35	70	5	28	138	54.3	1.2	27.7	116.9	6.6	65.4	59.9	332
1896	34	95	7	32	168	49.2	1.8	26.8	108.8	8.7	61.9	67.1	324.3
1897	48	125	9	29	211	44	2.7	26.3	125.7	6.5	56	83	344.2
1898	41	92	9	25	167	53.1	1.2	10.5	117.7	6.9	40.3	42.9	272.6
1899	52	138	13	30	233	66.5	1.1	10.3	145.5	8.5	43.4	45.3	320.6
1900	48	132	16	37	233	81.6	3.6	12.4	192.1	21	47.2	55.3	413.2
1901	66	76	17	33	192	59.2	2.0	15.3	202.3	17.5	55.0	51.4	402.7
July	5.9	19.9	1.4	2.8	30.	2.8	.03	1.06	17.	1.33	3.78	5.88	31.85
August	3.7	13	1.7	2.9	21.3	2.4	.05	.91	18.9	1.32	3.67	5.30	32.58
Sept.	6.6	15	1.3	3.2	26.1	2.9	.08	1.09	14.7	1.15	3.74	5.50	29.16
Oct.	5.4	10.7	1.5	3.6	21.2	3.3	.09	1.10	16.2	1.47	2.58	5.73	30.47

—Reports from France state that the results of the first experiments in silk raising in Madagascar are encouraging, considerng the difficulties with which the industry has to contend. The first batch of cocoons yielded one pound of silk for each five pounds of cocoon. This is considerably below the yield in France, which is one pound of silk for three and a half or four pounds of cocoon. The difference is attributed to the unskilled labor employed.

—An English firm of carpet manufacturers have recently received from Wm. Smith & Bros., Heywood, what is claimed to be the largest carpet yarn printing machine in the world. The drum is 60 feet in circumference and 20 inches wide, and is mounted on a shaft 6 inches in diameter. It is stated that the circumference of this drum is 6 feet more than that of the largest drum heretofore built.

—Good maxims are the seeds of future strength; firmly fixed in the memory they nourish the will power. —Joubert.

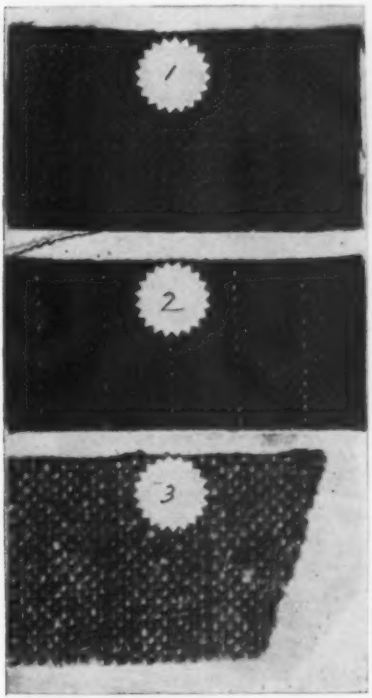
—Treat fortune as you do your debtors: do not spurn the smallest offering.—De Levis.

Seasonable Fabrics.

WOOLEN GOODS.

The condition of affairs in the market for men's wear woolens and worsteds has changed little since our last writing. Manufacturers are still far behind on their deliveries of sample pieces, and the clothing trade are bitterly complaining of the inconvenience to which they have been subjected on this account.

The majority of the mills making



both heavy weights and light weights had accepted orders for fall goods to be delivered later than usual, in consequence of which they were tied up and unable to meet their obligations with reference to the delivery of light weight sample pieces. In many cases clothiers will be obliged to go out with reference samples instead of sample suits.

Fair supplementary business on men's wear woolens, in light weights, has been noticed during the past week or two and in addition to business on spring lines, the re-orders for heavy weights have been unusually heavy for this late season.

So far as can be learned, no definite steps have been taken, as yet, toward the opening of heavy weight prices for fall of 1902, and, on account of the late deliveries on light weights, no movement in this direction will probably be made for some time to come.

Hard finished worsted suitings have been the most successful fabrics in the line of light weights for men's wear and in Fig. 1 we illustrate a fine grade of 6/4 goods made and sold by Kunhardt & Allen at $2.25 less 5 per cent. trade. In Fig. 2 is illustrated one of Kunhardt & Allen's best styles of unfinished worsted in herringbone stripe pattern, on which they have done a good business at $1.60 per yard 5 per cent. trade 6/4 goods.

Wool crashes are coming in for a fair share of attention, the more popular sellers being goods priced in the neighborhood of 85 cents to $1.00 per yard. In Figs. 3 and 4 are represented two successful styles on which the above mentioned firm have been very successful at 87½ cents.

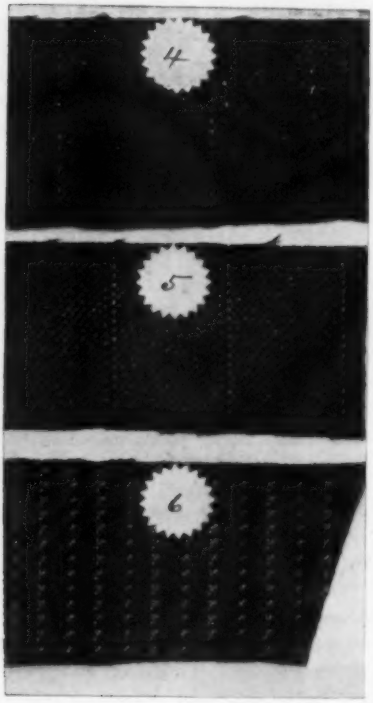
Neat, narrow stripes will be the predominating styles in trouserings, with a strong preference for black and white patterns in double and twist goods as represented in Fig. 5, which is from the line of the American Woolen Co., price $1.95 regular.

Two other good styles of trouserings on which Sullivan, Vail & Co. have done a good business at $1.75, are represented in Figs. 6 and 7.

In Fig. 8 is illustrated one of the American Woolen Co.'s most successful styles in worsted cheviot suitings, on which they have done a very large business at 97½ cents in 6/4 goods. This is a herringbone weave with overplaid of red, and is a decidedly Scotchy effect.

A line of goods in black and white mixture effects was brought out late in the season by the American Woolen Co. and was very quickly sold up at $1.42½. One of the very best selling styles in this line is represented in Fig. 9.

Oxford grays in woolen goods are exceedingly scarce and are in strong demand on account of the popularity of the Raglan coat. Friezes are also



in good demand, and black Thibets ranging in price from 82½ cents to $1.00 in 15 to 18 ounce goods are hard to procure and the demand cannot be met. The Hockanum Association has advanced their Thibets 7½ cents per yard and are well sold up.

WOOL DRESS GOODS.

From present indications, everything seems to point toward a spring season of plain and sheer fabrics in wool dress goods, with little indications that fancies will develop any strength whatever.

Buyers, who have been in the market, have shown a strong preference for these thin sheer fabrics such as batistes, albatrosses, crepe de chenes and materials of this description. The albatross cloth has, perhaps, been considered more favorably than any other weave, and the few domestic manufacturers who make a satisfactory cloth of this character have all the orders which they can handle for delivery before March and April.

The prunella and the granite cloth are second only to the albatross, and have come in for a good share of attention. Little can be said as to colorings, as orders which have been booked, thus far, show a large range of colorings.

For immediate delivery, mohairs and sicilians are in particularly strong demand, and broadcloths, serges, cheviots and venetians, are also very good. There has also been noticed an increased demand for fancy waistings and the probabilities are that these will be, perhaps, a little stronger than usual for spring. The more elaborate patterns, known as Persian effects, will probably have the leading call.

COTTON LININGS.

The volume of orders for cotton linings, during the past few weeks, has been of moderate proportions and has shown a steady demand in most departments. There has been a slight advance in the quotations on kid finished cambrics, 64's having been advanced an ⅛ to 3⅝, and 56 by 60's from 3⅜ to 3½.

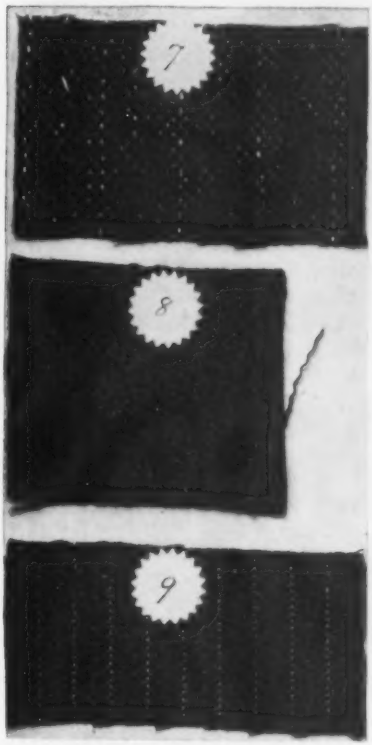
Silesias remain unchanged, with a fair demand and no indications of any price changes in the near future.

From the clothing trade, a steady business has been received on cotton twills, Italian cloths, Alberts and printed warp sleeve linings, with no fluctuations in prices. For highly finished plain and fancy cotton linings, there has been a steady demand, and one or two novelties along this line

have recently been introduced. Burton Bros. have introduced a 36-inch mercerized lining in a moire effect at 22½ cents net, under the name of Diamond Silk. This cloth in a wide range of colorings has been very favorably received and its success is assured. In Fig. 10 is illustrated another novelty made by the same concern and priced at 17½ cents net, and styled Harlequin cloth.

COTTON DRESS GOODS.

Manufacturers of cotton dress fabrics are busily engaged on their con-



tracts as the time for spring deliveries is rapidly drawing near, and prompt deliveries must be made. Every indication points toward a phenomenal season on wash dress goods, and the number and novelty of beautiful designs and weaves that will be offered to the public this season will surpass anything ever before attempted.

One of the genuine novelties of the season will be the "Eclipse Mills Flannel," made by the Arnold Print Works to job at 12 1/2 cents less 10 per cent., in 34 inch widths. This article in appearance of cloth and character of design is an almost perfect imitation of a French flannel, and is considered one of the most attractive of the season's many beautiful productions. In Fig. 11 is shown one of the best styles of this cloth.

The dotted Swiss muslins made by this concern have also been commended for beauty of design and weave. In Fig. 12 is represented one of the best patterns of this line, selling at 9¼ cents, 28 inches.

SILKS.

Prices on piece goods are firm and no material changes are looked for. Spring lines are being generally shown by agents and buyers have ordered very liberally along certain lines.

The popular tendency seems to be in the direction of grenadines, satin liberties and printed foulards, and it is the general opinion that the greater part of the business of the spring season of 1902 will be done on goods of this character.

A good business is also anticipated on open work and hemstitched effects, and in the line of plain goods, taffetas, peau de soie, and duchesse, will have the leading call.

From the fact that raw silk is from 50 cents to $1.00 higher than when present prices on piece goods were made, it is not likely that prices will go any lower, and there is a strong probability that some advances will shortly be heard of.

Reports are in circulation on the market with reference to the new imitation silk which, it is said, is shortly to be produced. This fabric is to be manufactured from China grass or ramie. This class of goods has been manufactured and experimented with for many years in England, the principal drawback having been the cost

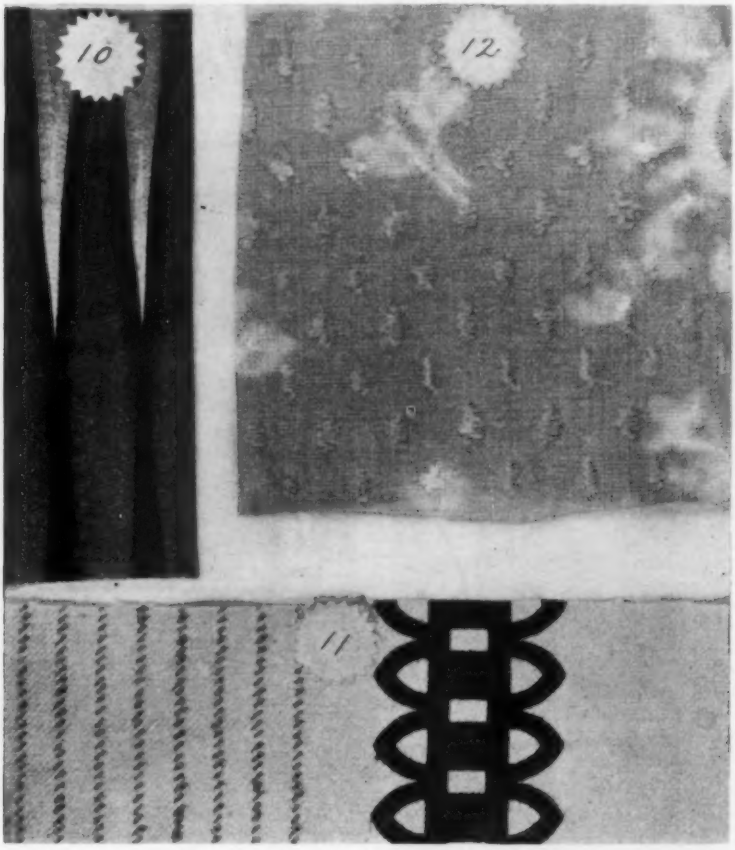
of manufacture due to the necessity of having special machinery, but by a new process which has recently been invented, it is said that the cloth can be manufactured at a cost little in excess of the cost of manufacturing cheaper cloths of wool and cotton.

Memoirs of a Veteran Wool Carder.

VII.

I then engaged with Jos. T. Ashworth, Agt., Hamilton Woolen Co., Amesbury, Mass. I took charge of the card room in three mills and stayed until about the time they changed from woolen to cotton.

I then carded with the Perry Knitting Co., Perry, N. Y., and the Commercial Knitting Co., Troy, N. Y., The Halyon Knitting Co., and the Diamond Knitting Co., Cohoes, N. Y., the Norfolk & New Brunswick Hosiery



—Neither Great Britain nor the United States cut much of a figure in the silk goods export trade of the world. The share of the former for the first eight months of this year was valued at but $5,915,130, while our exports of silk goods are hardly visible to the naked idea, being valued at $182,540.

Co., E. Jenckes Mfg. Co., Pawtucket, R. I. and then worked for Geo. Mabbitt, Superintendent, Central Falls Woolen Co., Central Falls, R. I., with whom I stayed a year.

The strangest thing I ever saw in a mill I saw here. The stock they were using was all Australian wool, and somehow or other it got awfully cut up in the picking room. George was almost crazy, because the yarn was so tender, and frequently threatened to quit, and would have done so but for me telling him to keep cool, that I would find out what the trouble was. (This was when I had been there only a week).

It was the same difficulty that had done up the last "super." Neither he nor the carder could find out the cause of it. I was getting disgusted myself, when one day I went down into the picking room determined to find where the trouble was. I did find it, and it was a very different cause from that in the Weybosset Mill.

The first cylinder on the bur picker was all bunged up, full of dirt, and looked as if it had not been cleaned for years. The wool picker was a good machine, provided with the concave dish and spiked roll. Some one, however, had raised the spike roll a long way off the concave, so that the stock could be rammed and jammed through in great chunks.

This space between the spiked roll and the concave was so large that the stock became stuck on the edge of the concave and the cylinder, which was a good one provided with sharp teeth, and the stock in this position was ground into flocks. I set the spike roll very close to the concave and you ought to see the difference in the staple. After this everything went on lovely. I never told anyone what the cause of the difficulty was, but George was more than pleased and raised my wages 50 cents per day.

I next had a call to meet F. C. Kennedy, the agent for the Burlington Woolen Co., Winooski, Vt. I met him in Boston and made a bargain to take charge of two mills with 28 sets of cards. I stayed there over a year. There was a very serious trouble in this mill, especially on mixed goods. I could not get anyone to fathom it. No matter what the quality of the stock was, whether coarse or fine, it was felted up like bed flocks. Now when the stock comes to a card room in this state, it is impossible for the carder to bring out work as he would like it; the yarn is bound to be twitty or nubby. I satisfied the company with my work, but I could not satisfy myself, consequently I went to work for Harwood & Quincy putting on feeders.

I afterwards took charge of card rooms in the Jesse Eddy mill at Fall River, Mass.; Marland Mills, Andover, Mass.; Pondicherry Mills, Bridgton, Me., and Rock Mfg. Co., Rockville, Conn. I left the Rock to go to work for Fred Burkhart & Co., St. Louis, Mo., carding goat hair. They had been making yarn for 30 years out of goat hair and shoddy, but they could not make it all hair, as they wanted to. The goods were used for saddle girths. I guaranteed to make it all hair and succeeded in doing this by simply vibrating the rub rolls faster.

Two years later I went to the Franklin Yarn Co., Franklin, Mass., and later worked for the Cobbosseecontee Woolen Co., Gardiner, Me., and other mills. In the last 36 years I had worked in 40 mills. The longest time I stayed in any mill was five years with the Cocheco Mfg. Co., E. Rochester, N. H.

I worked in a mill some years ago where the superintendent was rather green. He had been brought up on hand looms in England (there are some hand looms there yet). After he reached this country, it did not take him long to learn weaving; from weaving he was promoted to loom fixer, from fixer to boss weaver and then to superintendent. You can guess how much he knew about a

card, when he asked me which was the fancy and which the workers. He did not know a fancy from a cylinder. He also asked me how they made worsted. This same man afterwards held high positions in the mill, and today is living and retired from business.

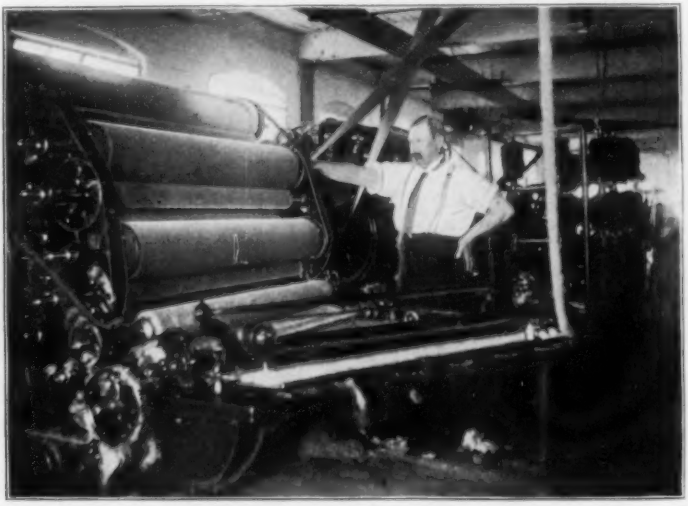
I had a boy from the country once working for me in the card room. After the mill had been stopped three or four days, I told him in the morning to oil up everything around the cards. The first thing I knew the second hand came up to me and said: "That farmer has oiled all the belts as far as he has gone." I looked over and saw that the greenhorn had been pouring oil on the belts. He had obeyed orders faithfully.

In the last 35 years things have changed wonderfully in the card room, and an old carder who has not kept up with modern ideas and modern card machinery is not in it. One that has kept up is hard to beat in the card room.

I remember the time when we had to grind new cylinders with strickles. It was necessary for the grinder to tie a handkerchief over his mouth and nose to keep the grinder dust out of his lungs.

The old grinding frame had a heavy concave piece of wood hollowed out to fit the workers and strippers. This concave was covered with emery and adjusted to the workers or strippers, by screws. It vibrated, but of course did not revolve on a shaft the same as the cylinder grinder does.

Look at the difference now. Now we have the cylinder and traverse grinders and the patent emery covering which can be put on much more evenly than can emery by the old method. In spite of this, I still find that in most of the card rooms I go into, the emery cylinders need new coverings.



SAM DRIVER IN THE CARD ROOM.

Some carders are very careless about these things. They hate to put on new emery, as they are afraid that they cannot get it true and so they continue to use the old emery, which has been used so long that the life has gone out of it and grinds to a chisel point.

Electricity is very troublesome in some card rooms. In the last mill I worked in, they had steam pipes

under the rub rolls blowing steam all day long summer and winter, on account of the electricity. They could not do anything with it, especially in the morning. They used some kind of emulsion, borax, potash, soda ash, soft soap, or something else, that was put on the stock boiling hot. The stock came to the card room in a gummy, soggy condition and it gummed up the cards badly especially on shoddy or wool that was not scoured clean. The best remedy I have ever found for electricity is to put on clear cold water, ice water if you can get it. Put the water and oil on separately. I have tested this remedy in more than one or two mills with complete satisfaction.

When I went to my last position the electricity was something awful. It was the worst I ever saw. I asked the superintendent what he used on the wool.

"Emulsion of some kind," he replied.

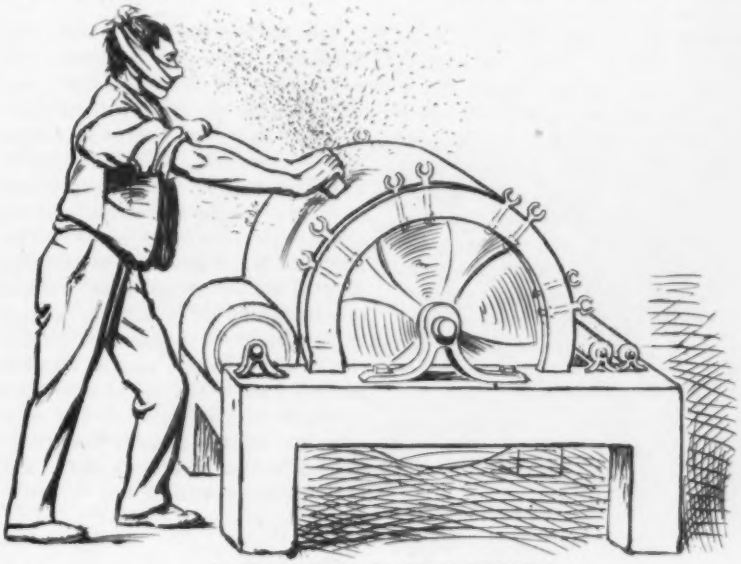
"Well," I replied, "from now on we will use cold water and oil."

He laughed at me and said:

"Why that will make it worse."

"All right, you can laugh. But he laughs best who laughs last."

We commenced the cold water cure, and the first batch so treated was wonderfully better; every batch kept getting better and better, and when we got the old waste used up there was not a sign of electricity in the card room and we were not troubled with it as long as I worked there. I got all the old gum off the card wires and rub rolls and everything went better than it had since the mill started. The "super" was delighted and said he would not have believed it if he had not seen it.



EARLY METHOD OF CARD GRINDING.
Sam Driver grinding a cylinder.

In closing these memoirs, I wish to call attention to the vast difference between the old times and the present. What a difference in opinions! What a difference in wool carding machinery! What a difference in the hurry and push! What a difference in the men that run the mills! Now we have the Bramwell, the Apperley, the Kershaw and the Bates feeds, the balling machines, fast running combs, fast running condensers and improved grinders. Things have changed!

SAM DRIVER.

THE END.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market.

Interested parties are referred to the manufacturers for further information. These items are published without charge and regardless of advertising consideration, the idea being to present to our readers a systematic monthly record of new machinery, etc. of interest to textile mill men.

We invite machine builders and others to send us such information for this department.

An Improved Spooler. The Draper Co., Hopedale, Mass., have brought out a yarn spooler, which possesses new features. It is provided either with the improved Northrop guide, which has a positive setting device independent from the rod clamp operated by turning an eccentric bearing pin, or the Lawrence guide, which has a spring-controlled lower blade that may be depressed for cleaning the slot. The regular Northrop guide is furnished, if desired. The bobbin holders are adjustable for different sizes of bobbins and rings. The wires must be adapted to the yarn, but the other parts simply need setting according to the requirements. The spool raising device allows the spool to be stopped by a movement of a lever. This Company have also recently turned out a traveling belt spooler with sheet metal chutes and adjustable belt tightener.

Trimming Device for Button Sewing Machines. The Union Button Sewing Machine Co., 164 High St., Boston, Mass., has perfected and is now putting on the market a device for automatically trimming both upper and lower threads after the button is sewed on, leaving the stitching on top and bottom with a smooth finish without any ragged ends, and at the same time securing the ends of both threads so that the operator is relieved of their care and the next stitch is perfectly made. This accomplishes an object which has been long sought for. The attachment is applicable to present machines already in use, and the company is applying them as rapidly as possible to old machines for a nominal sum, as well as supplying complete equipment to new customers. More detailed description of the device will be found in the pages of the Knitting Department.

New Splicer for Knit Goods. McMichael & Wildman, Norristown, Pa., are putting on the market a splicer which is the result of several years' effort on their part to produce a splicing device free from defects of such attachments. It is claimed that with this splicer lost ends and lost courses are practically avoided. Dependence is not placed upon the main yarn to attract broken ends; all sizes of yarn up to 100 counts can be used. The device is independent of the thread guide, which can be adjusted as freely as if the machine was not equipped with a splicer. The operator can see the relative position of the carrier and needles as easily with the splicer as without it.

New Pulley. The Tangent Grip Pulley Company of Jamestown, N. Y., is putting on the market a wood split pulley with malleable iron spokes and hub and patent iron bushings. The advantages claimed are that it combines the strength of the iron pulley with advantages of wood split pulley, is light on the shaft, easy to handle, quickly and permanently adjusted so that it will not slip and has a positive grip on the shaft; it is further claimed that their process of manufacture insures true running and perfect balance.

Gimp or Bullion Machine. The Lombard Textile Mill Supply Co.,

2140 Leithgow St., Philadelphia, Pa., have recently placed on the market a gimp machine for embroidering curtains and upholstery fabrics. It is claimed that this is the only machine making these goods in continuous lengths, others being adapted for making limited lengths, say from eighteen to twenty-four yards. The Lombard machine turns out goods in lengths of from three hundred to one thousand yards without twisting or knitting the goods.

Vacuum and Relief Valve for Drying Cylinders. James Chadwick & Son of Frankfort, Philadelphia, Pa., have recently brought out an improved relief valve for drying cylinders, which is designed to prevent explosions. Although drying cylinders are generally operated with low pressure steam, a number of explosions have occurred with loss of life as well as property. Messrs. Chadwick & Son claim that with their improved valve an explosion is made impossible. It is provided with a straightway opening and can be set to any pressure desired. It is claimed that the workmen cannot disarrange it after it is once adjusted, as all the parts are covered. It can be applied to any cylinder in use, by simply screwing out the old valve and screwing in the new one.

Balling Machine. The Allen Iron Works, Adams, Mass., have just placed on the market a balling machine which is adapted for a doubler, and balls the yarn direct from the reel in the same operation. This machine has a new traverse motion operated with sprockets, which take the place of the expensive double screws. This machine should interest cotton manufacturers, as it dispenses with the old balling machine.

Deep Well Pumping Outfit. The Gould Manufacturing Co., Seneca Falls, N. Y., have recently brought out a specialty in the line of deep well pumping outfits, for use in cotton mills. This outfit consists of a deferential power working head with pulley for belt drive operating a brass artesian cylinder. Illustrations and description will be sent to any interested party by the Gould Manufacturing Co., upon application.

Automatic Knitter. Spiers & Grieve, Leicester, England: An improved automatic knitter for seamless hosiery, which changes automatically from plain to ribbed stitch. The speed of the machine is automatically decreased and increased. A special needle is used, which forms the main feature of the machine and which is automatically transferred from one stitch to the other, the needles being thrown out of action as required.

Bale Opener. John Hetherington & Son, Vulcan Works, Manchester, England, are introducing an improved hopper bale opener designed to facilitate attendance on the machine, and to clean the cotton more thoroughly. An automatic cleaning device is attached to the screen below the exhaust fan, the object being to keep the screen clear and make dependence upon the faithfulness of the attendant less necessary. A new form of spiked apron is used, which, it is claimed, saves much trouble and stoppage for repairs.

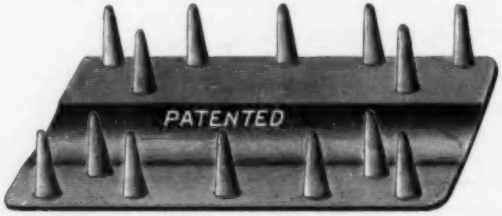
Feeder for the Crighton Opener. Asa Lees & Co., Oldham, England, are building an improved feeder for the Crighton opener, consisting of a tall, funnel-shaped drum into which the cotton is blown in a tangential direction. The draft of air is so guided that the cotton is carried down to the opener, and the dust rises and is carried away.

Improved Cloth Shear. J. Schlenter & Co., Aachen, Germany, are building a shear with the spiral revolver blades in the form of a knee instead of concave or straight. It is claimed that with this knee form the shear remains sharp much longer and that the

revolver does not wear away so rapidly as with the concave or straight form.

Aluminum Spinning Tubes. Chiesa & Biella, 38 Foro Bonaparte St., Milan, Italy, are putting on the market three styles of aluminum spinning tubes as follows: An ordinary tube, a tube centred for ring spinning, and a perforated tube for cop dyeing. They claim that these tubes are much superior to the paper tubes, owing to their lightness and great durability. Samples of the three tubes are at the office of the Textile World, where they can be seen by anyone interested.

Waterproofing Process. A new process for waterproofing goods has been invented by M. Zorn. A committee appointed by the Industrial Society of Rouen, France, to examine the process reports that it appears to be superior to any heretofore used. The method is not described in the abstract of the report received.



The Thatcher Belt Fastener.

The accompanying illustration shows the belt fastener manufactured by the Thatcher Belting Hook Co., 245 Crawford Road, Cleveland, Ohio. The only tool required, when connecting the belt with this fastener, is an ordinary hammer to drive the teeth through the belt and clinch them on the other side. No machine punches or other tools are required.

The Thatcher hook has been in use for twenty years, and its merits are attested by the fact that today, after two decades of constant use, it is in greater demand than ever before. It is claimed that this fastener does not weaken the belt nor break the grain or fibre. The teeth take up much less space than lacing and do not rip or tear the belt. Putting on this fastener on a belt requires two or three minutes.

They are made for all widths and thicknesses of belting. The joint is neatly made, so that the belting runs smoothly on the pulley.

The points claimed in favor of this fastener are summed up as follows: Low cost; economy of time in splicing the belting; reduced wear and tear on the belting; a smooth bearing surface.

The directions for the application of this fastener are as follows: Place the two ends of the belt together on a block of wood, drive the hook through and clinch always towards the break in the material. No punch required. The clinched side of the hooks runs next to the pulley. Two or more hooks used on wider belts. The hook should not be as wide as the belt; always leave from ⅛ to ¼ inch on each edge of the belt.

Further information may be obtained from the manufacturers.

Annual Convention of the Southern Cotton Spinners' Association, Held at Atlanta, Ga., Nov. 14-15, 1901.

The fifth annual session of the Southern Cotton Spinners' Association was held in the Kimball House, Atlanta, Ga., on the 14th and 15th of last month.

The meeting was called to order by Dr. John H. McAden, president of the association. Mayor Livingston Mims delivered an address of welcome, which was responded to on behalf of the association by D. A. Tompkins.

Dr. John H. McAden then delivered his annual address, in which he offered many practical suggestions for the upbuilding of the cotton industry in this country. He recorded himself as being strongly in favor of reciprocity, and advised the Southern spinners to direct their attention to the manufacture of higher grades of goods as a remedy for the present depression in the cotton industry, which has been brought about by the over-production of low-priced goods.

It will be remembered, that at the recent meeting of the New England Cotton Manufacturers' Association held at Niagara Falls, President Fish suggested that the Northern and Southern Associations be united to make one representative national association of cotton manufacturers. President McAden referred to this in favorable terms. He stated that there should be no division of the American cotton industry, or sectional feeling, and recommended the suggestion of Pres. Fish to the favorable attention of the members.

R. H. Edwards then delivered an address on "A Southern Industrial Task."

The Southern Railway extended an invitation to the Convention to take a three hours' trip on a belt line around the city. This invitation was accepted by a large number of those present. They visited the Exposition Cotton Mills, and the Fulton Bag & Cotton Mills, beside many other points of interest around Atlanta.

In the evening, the members were entertained by the Chamber of Commerce at a bohemian smoker. Senator John L. McLaurin of South Carolina delivered an address on the "Extension of Our Foreign Trade," in which he advocated subsidies as a means of building up the merchant marine, and thus extending our foreign commerce. He was followed by the Hon. Hoke Smith in an address entitled "Development of our Home Talent." Mr. Smith dwelt upon the importance of technical education, and showed how the success of Germany in extending her foreign trade was directly due to the excellent technical schools in which her youth has been trained for many years.

At the Friday meeting session the report of Secretary Geo. B. Hiss of Charlotte was read. This report showed a very satisfactory financial condition of the association. At this meeting a telegram was received from J. C. Hemphill, president of the Interstate and West Indies Exposition, inviting the association to hold their next meeting at the Exposition at Charleston, S. C. The association voted unanimously to accept the invitation, and the next meeting will therefore be held on the second Thursday in May, 1902, at Charleston, S. C.

The next business was the election of officers. C. B. Bryant of Charlotte, S. C., was elected secretary and treasurer. President McAden was elected to serve in his present position until after the May meeting in Charleston. It was voted to increase the Board of Governors membership from nine to fifteen, and the following were re-elected for three years: J. C. Smith, Newton, N. C.; R. S. Reinhardt, Lincolnton, N. C., and W. C. Heath, Monroe, N. C. The new members of the Board elected were as follows: David Clark, Charlotte, N. C.; Val Taylor, Uniontown, Ala.; J. P. Leak, Rockingham, N. C.; Thomas M. Swift, Columbus, Ga.; T. L. Wainwright, Stonewall, Miss.; W. R. B. Whittier, Chattahoochee, Ga. These, with D. A. Tompkins, chairman, Charlotte, N. C.; A. C. Miller, Shelby, N. C.; R. R. Ray, McAdensville, N. C.; A. P. Rhyne, Mt. Holly, N. C., and Leroy Springs, Lancaster, S. C.

A committee of five was appointed to visit the A. French Textile School of the Georgia School of Technology.

The following were elected active members of the association: Albert W. Noone, Peterboro, N. H.; Asa G. Candler, Jr., Hartman, Ga.; B. F. Strickland, Valdosta, Ga.; George T.

Marsh, Huntsville, Ala.; T. M. Hobb, Athens, Ga.; E. A. Thompson, Abbeville, S. C.; J. W. Spain, Quitman, Ga.; J. W. Roberts, Anderson, S. C.; C. M. Candler, Atlanta, Ga., and G. B. Scott. The following were elected to associate membership: W. H. Harris, Charlotte, N. C.; James E. Rigg, Providence, R. I.; J. G. F. Randolph, Boston, Mass.; W. Drummond Marrow, Charlotte, N. C.; H. L. Jones, Macon, Ga.; Val. Taylor, Uniontown, Ala.; James L. Sheppard, Jr., Columbia, S. C.; Charles L. O'Male, Spartanburg, S. C.; W. H. Ramseur, Charlotte, N. C.; Edwin K. Wood, Boston, Mass.; E. E. Burnham, Lawrence, Mass.; Cuyler Smith, Atlanta, Ga.

The attendance at this meeting was very large, and there were a goodly number of representatives from the Northern states present.

The Analysis of Mixed Fabrics.

To Determine the Proportions of the Different Materials.

JULES PERSOZ.

(Translated from the French.)

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QUALITATIVE ANALYSIS.

General Method.—According to Peltier, vegetable and animal fibres can be readily distinguished by plunging the sample to be tested in a solution composed of equal parts of concentrated nitric and sulphuric acid, and afterwards washing well in clear water. Silk and goat hair dissolves completely and wool becomes yellow or brown. The vegetable fibres are changed but little in appearance, but when dry burn like gun cotton.

To determine the presence of animal and vegetable fibres in a mixed fabric, a piece of the cloth is boiled in a 10 per cent. solution of caustic soda. Wool and silk dissolve completely, while the vegetable fibres are not appreciably affected.

If the cotton fibres are colored, the residue is first boiled in water; it is then subjected to a hot solution composed of 5 per cent. of hydrochloric acid. After ten minutes a small quantity of chloride of lime is added. The vegetable fibres are bleached by this solution, so that they can be examined, and their exact nature determined.

A few drops of acetate of lead are added to the liquid containing the dissolved animal fibres. The presence of a white precipitate which redissolves completely by agitation indicates that the sample contains no wool. If on the contrary wool is present, a black precipitate is formed. Wagner advises the use of a few drops of nitroprussiate of soda in place of the acetate of lead; this gives the liquid a bright violet shade when it contains sulphide of soda.

COTTON AND LINEN.

1. A small piece of the goods is placed in a solution of equal parts of caustic potash and water. At the end of two minutes the sample is raised with a glass rod, and placed between several thicknesses of filter paper to remove the excess of water. The cotton will be white or clear yellow; the linen becomes a dark yellow. This method is not adapted for colored goods.—(Boettger.)

2. M. Kuhlmann recommends the use of a strong but cold solution of potash. This causes unbleached cotton to shrink or curl up and become grey or dirty white. Unbleached linen shrinks still more than cotton and acquires a yellow orange shade.

3. According to Alcan, it is sufficient to plunge the material in clear oil or glycerine, and afterwards squeeze out the excess of the liquid. Linen becomes transparent by reason of the oil rising by capillary action between the individual fibres of the material, while the cotton remains relatively opaque. The sample should first be previously well dried.

4. The sample having been freed from the finishing material, and dried, is immersed for one or two minutes in concentrated sulphuric acid. The

fabric becomes transparent. The cotton is first attacked and converted into gum, while the linen is still white and opaque. The sample is washed to remove the acid and gummy matter, rinsed in alkaline water, next in clear water and dried. It is then compared with the original sample.—(Kindt.)

5. The fabric to be tested is immersed in a saturated solution of sugar and of chloride of soda, and dried. The separate threads are then burnt. The linen leaves a grey, and the cotton a black ash.—(Chevallier.)

6. A solution composed of one part of cochineal or madder, and twenty parts of alcohol (density .847) is left standing for twenty-four hours.

(a) When the sample is impregnated with this solution of cochineal, the cotton is colored clear red, and the linen violet.

(b) Impregnated with this solution of madder, the cotton becomes clear yellow, and the linen either dull reddish yellow or yellowish orange.

7. Boettger recommends that a small sample be immersed for a few minutes in an alcohol solution containing 1 per cent. of fuchsine, and then washed in running water. It is next placed under a cover with ammonia for two or three minutes. The cotton tarnishes rapidly while the linen retains a bright rose color.

JUTE, PHORMIUM, HEMP AND LINEN.

1. The material is submitted to the action of a solution of chlorine for one minute, then spread on a porcelain dish and several drops of ammonia applied. Phormium and jute become at first bright red, which afterwards changes to a dark brown; linen and hemp acquire a much lighter shade such as clear brown, orange or fawn.

This method is very good for yarn or unbleached cloth and is particularly well adapted for testing sail cloth. French hemp retted in stagnant water is colored a much deeper shade than the same kind of hemp retted in running water. In either case the color is much darker than that acquired by linen.

For testing twine this method gives excellent results, but in bleached materials the difference in the shades produced is not marked.—(Vincent.)

2. Bleached goods are immersed for an hour at 36 deg. C. in nitric acid containing nitrous vapor. Phormium acquires a blood red color, while linen and hemp are tinted pale yellow or rose according to the method by which they were originally retted.—(Same.)

3. Hemp and linen are not colored even when heated in concentrated hydrochloric acid, while phormium under the influence of this acid becomes yellow at a temperature of 30 or 40 degrees C., then becomes red, next brown and finally black.—(Same.)

4. Iodic acid does not affect hemp or linen, but it imparts a rose shade to phormium. Other textiles besides phormium give diverse reactions.—(Same.)

5. Jute is distinguished from phormium by soaking the fibres for two or three minutes in an iodine solution, and then rinsing thoroughly several times in a 1 per cent. solution of sulphuric acid to remove the excess of iodine. By this treatment the jute acquires a characteristic reddish brown shade, while phormium becomes clear yellow.—(M. Felix Gouilon.)

Under the same conditions, hemp acquires a light yellow shade, and linen a blue shade.—(M. Pinchon.)

It is a good plan to untwist the threads previous to this treatment. The iodine solution should be made by the method employed by M. Vetillart. He prepares a pure solution of iodine by dissolving one (1) gram of iodide of potassium in one hundred (100) grams of distilled water, then adding an excess of iodine to secure a complete saturation of the liquid.

The sulphuric acid is prepared by diluting, not with water alone, but with glycerine, and avoiding heat. The acid mixture (which should be prepared fresh for use) is made as follows:—

2 parts of concentrated pure glycerine,
1 part of distilled water,

3 parts of pure sulphuric acid, 66 deg.

The glycerine has a remarkable effect. It tempers the action of the acid, so as to prevent injury to the fibres, and at the same time brings out certain details of the structure with great clearness when the fibres have previously absorbed the iodine.

WOOL AND COTTON.

1. The cloth is saturated with ordinary nitric acid, left in this liquid for seven or eight minutes and then subjected to a mild heat. The wool fibres soon acquire a yellow shade, while the cotton remains white. The fabric is then washed and dried. Examined under a microscope or even with the naked eye, the differences in shade enables the two fibres to be readily distinguished.—(Lassaigne.)

2. Bichloride of tin is likewise adapted for the testing of wool and cotton, which are either white or but slightly colored. The cotton and linen are made black, while wool and silk are not changed.—(Maumene.)

WOOL, SILK, COTTON, LINEN, ETC.

1. The sample is saturated with a solution of plumbite of soda (formed by boiling the excess of soda in litharge). The wool quickly becomes brown, even at an ordinary temperature, but especially when heated, by reason of the sulphur in the wool fibre. Silk, cotton and linen remain unchanged.—(Lassaigne.)

2. The sample is immersed in a moderately concentrated solution of nitrate of mercury at a temperature of 40 to 50 deg. C. At the end of one hour, the wool and silk become red or amaranth, while the cotton is not colored. This solution of mercury is formed by dissolving at a gentle heat one part of mercury in two parts of nitric acid (28 deg. B.) These are boiled for five minutes to convert a portion of nitrate of protoxide into nitrate of bioxide. The liquor is then diluted with an equal volume of water.—(Lassaigne.)

3. A colorless solution of rosaniline is often used to distinguish the vegetable and animal fibres from each other. This solution is prepared by dissolving fuchsine in boiling water and gradually adding ammonia or soda during the boiling. The solution is then filtered and stored in tightly corked bottles for use.

Ammonia is added to this solution, which is then brought to a boil. The uncolored fabric is immersed for a few seconds and then washed in water. Wool, silk and other animal fibres are colored red, while the vegetable fibres remain white.

Following is a table giving the chemical methods used for analyzing important textile fabrics. It is based for the most part upon the practice of M. Pinchon, Professor of Chemistry at Elbeuf.

QUANTITIVE ANALYSIS.

General Method.—In many cases it is sufficient to simply unravel the threads in the fabric. A small piece is cut from the goods, and the warp and filling raveled out, each separate material being collected and weighed. These weights show the proportions of the different fibres. This method while convenient is not always practical, particularly when the individual threads are composed of different materials. Sometimes the finishing operation affects unequally the warp and filling, shortening the fibres and making the unraveling very laborious or uncertain. It is, therefore, preferable in most cases to employ chemical means; these are suited to all conditions under whatever form the fibres may be found in the fabric.

Before proceeding with the analysis, any finishing or dyeing materials should first be removed. This can be done with sufficient thoroughness in most cases by submitting the sample to alternate baths of acid and alkali.

A boiling bath containing a small percentage of hydrochloric acid is used for the first treatment. This removes the finishing material and the metallic oxides which have served for mordants, and will probably strip part of

the dye stuff from the fibre. If the color discharges freely, the sample should be introduced into a fresh bath and then, if the color has not entirely disappeared, it should be treated in a

	Boiling Caustic Alkali	Boiling Zinc Chloride	Chlorine Water and Ammonia (successive baths).	Potassium Iodide and Sulpauric Acid (successive baths).	Alcohol and 5% Fuchsine
Silk	All Dissolved.	All Dissolved.			
Wool	All Dissolved.	Unchanged.			
Wool and Silk	All Dissolved.	Silk Dissolved; Wool Unchanged.			
Jute	Unchanged.		Bright Red; then Red Brown.	Red Brown.	
Phormium	Unchanged.		Bright Red; then Red Brown.	Yellow, which is reddened by nitric acid	
Hemp	Unchanged.		Slight or no change of shade.	Yellow.	The color stands washing; made yellow by potash.
Linen	Unchanged.		Slight or no change of shade.	Blue.	The color stands washing; made yellow by potash.
Cotton	Unchanged.				The color disappears by washing; not made yellow by potash.
Silk, Wool and Vegetable Fibre	Silk and Wool dissolved; Vegetable fibre unchanged	Silk dissolved; Wool colored black by plombite of soda and dissolved by caustic alkali; Vegetable fibre unchanged.			
Silk and Vegetable Fibre	Silk dissolved; Vegetable fibre unchanged.	Silk dissolved. Vegetable fibre unaffected by plombite of soda or caustic alkali.			
Wool and Vegetable Fibre	Wool dissolved; Vegetable fibre unchanged.	Unchanged. Then treated with nitric acid: Wool made yellow; Vegetable fibres remain white.			

TESTS FOR MIXED FABRICS.

boiling carbonate of soda bath standing at 1 deg. B. If caustic soda is used the bath should be weaker. The sample is then passed through an acid bath as at first.

The alkaline solutions dissolve the color material remaining on the fibres after the metallic oxides have been removed by the acid. They also act at times on the dyes which have been applied without mordants. The sample after this treatment is rinsed thoroughly, and dried by a gentle heat. It is placed in a room where the atmospheric conditions are as uniform as possible. After a time the sample is weighed twice, at an interval of fifteen minutes and, if no change is observed, this weight is taken as the basis for the analysis. The small quantity of mordant and coloring material remaining on the fibres cannot affect the result to any extent.

WOOL AND COTTON OR SILK AND COTTON.

In either case advantage is taken of the property of caustic alkali to dissolve animal fibres. The sample is prepared and weighed, as already described, and is introduced into a boiling bath of caustic soda (8 deg. B.). After a time, which varies with the nature of the animal fibres and the texture of the goods, but which should not exceed a quarter of an hour, the wool or silk in the sample is dissolved. The residue, composed of cotton, is taken from the bath, well washed in water, dried and exposed in the same room as before until no variation in weight can be discerned. The loss represents the silk or wool. Experience has proved that the cotton is slightly affected by the acid and caustic soda; this loss, however, is so small as to be negligible in practice.

WOOL AND SILK.

Caustic alkalies cannot be used in this case, as they destroy both silk and wool. A concentrated solution of zinc chloride possesses the property of dissolving silk, but not vegetable or other animal fibres. This salt as found in commerce contains a percentage of free hydrochloric acid, which attacks the vegetable fibres. It is, therefore, advisable to add at a boil before making the solution, an excess of oxide of zinc, in order to render the solution neutral or basic. This solution is then filtered and evaporated to 60 deg. B.

By placing the sample in this liquor at a boil, the silk disappears almost instantly. The residue, composed of wool, is first washed in water acidulated with hydrochloric acid, next in clear water, and then dried and weighed. The same chloride of zinc solution can be used a number of times, as this liquor will dissolve a large quantity of silk. If it becomes too concentrated by boiling, it should be brought back to the original density by the addition of distilled water.

SILK, WOOL AND COTTON.

The sample is first submitted to the action of zinc chloride to remove the silk; the residue is then washed, dried, weighed and then treated in a boiling caustic soda solution to remove the wool, as already described. The same process is used for analyzing yarn. It is a good plan to wrap the sample in a light covering, especially where thread is liable to disintegrate and the fibres become separated.

We give the following methods more as a matter of information than for their practical use. They are interesting, but less convenient than those just described.

WOOL AND COTTON.

The sample is treated in a 2 to 3 deg. B. sulphuric acid bath or with dilute hydrochloric acid. It is taken out, the surplus liquor squeezed out and then placed in an oven at a temperature of 75 deg. C. The cotton is carbonized and becomes brittle, so that it can be converted into dust by friction and easily removed from the fabric. This is the well known carbonizing process which destroys all vegetable matter.

WOOL AND SILK.

1. The sample is immersed in a solution of hydrated cupric oxide in ammonia known under the name of Schweitzer liquor. The silk disappears at the end of five or six minutes, while the wool remains intact. The treatment should be rather prolonged somewhat when the silk is colored. The same result is obtained with an ammoniacal solution of oxide of nickel. An addition of an acid to the Schweitzer solution after the sample has been treated discloses the presence or absence of vegetable fibres, according as a precipitate is formed or not. Silk does not give any precipitate.

2. According to Barreswil, the analysis can also be made by treating the sample in cold commercial nitric acid. At the end of a short time the silk will first turn yellow and then entirely dissolve. The wool which remains is then washed and weighed. As nitric acid attacks wool to a certain extent, this method does not admit of great precision.

COTTON DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

The Weaving of Damask.

BY H. KINZER AND K. WALTER.

(Translated from the German.)

By the ordinary method of jacquard weaving in which one mail eye or cord is used for each thread, the width of the pattern is in proportion to the number of hooks in the machine. Each hook controls as many cords as there are patterns in the width of the warp. Thus the number of patterns is equal to the times that the number of cords include that of the hooks.

On a four hundred hook machine a warp pattern with four hundred threads can be woven. This is exclusive of selvages, for which an extra number of cords are provided. If there are 1200 threads in the warp, this will give three 400 thread patterns in the whole width of the cloth; each hook will control three cords; each cord one mail, and each mail one warp thread.

Within the limits of these four hundred threads the designer has free scope. He can give each one of the four hundred a different movement in the texture, if desired, and the contour of the figure can be varied by the movement of single threads.

Now, if two mails, each holding a warp thread, are attached to each cord on a hook, it follows that the pattern can then be made to include 800 threads, which work in pairs instead of singly, as before. If four mails are controlled by each cord, the capacity will be increased to 1600 threads and the pattern can be made four times as wide as with the single tie up. Single threads, however, cannot by either of the last named arrangements be moved independently. By the raising of a hook, two or four consecutive warp threads respectively will be raised in each pattern. The contour of the figure cannot be varied by single threads, but the changes must be made by degrees of two or four threads, as the case may be. This is a distinct feature of damask weaving.

When a damask fabric is constructed with the same density of warp and filling threads per inch, it follows that the changes by degrees of four threads which is compulsory in the warp, must be adopted for the filling, otherwise, the pattern will be distorted, having the right width, but only one-quarter of the required length.

If the density of the filling is only one-half that of the warp, two threads of filling will occupy the same space as four of the warp. To preserve the correct proportion in the design of such a texture the changes in the filling must be made by degrees of two threads, corresponding to the four thread degrees in the warp.

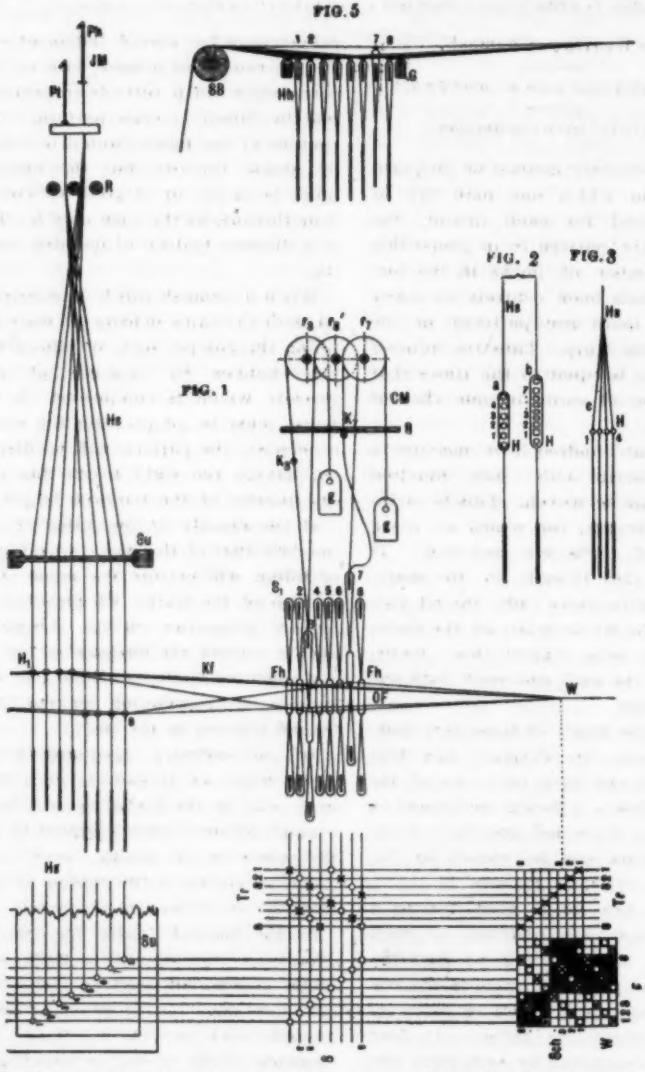
In an ordinary jacquard design made with one thread in each mail, each point in the design is, as it were, a single element; these consist of single points in the design, each corresponding either to the raising or lowering of one thread in the warp.

In the damask fabric the case is otherwise; the pattern is made with single points, but each of these indicate not one, but a group of warp threads; each point in the design corresponds to the raising or lowering of as many consecutive warp threads as are controlled by single cords. It thus follows that the design paper must be adjusted, not to the number of warp and filling threads, but to the number

of groups of warp and filling threads. A single thread cannot be tied down or raised independently since each point in the design corresponds to an entire group of threads, drawn through a single mail.

of the warp threads adjacent to each other may be raised or lowered. For instance, in making a straight line across the cloth, it may happen that all of the hooks are raised or lowered, bringing all of the warp threads either

FIG. 5



A twill or plain weave in a damask pattern is employed not to form the figure, but to make the effect of a particular part of the figure more or less prominent. In the weaving of a damask fabric a large or small part

up or down. In the former case a certain number of threads must be lowered and in the latter a certain number must be raised to form a texture with the filling.

Now comes the question: In what

manner will this raising or lowering of the warp threads be effected while they are held in position by the jacquard mails? Since it is not possible to do this, with the jacquard attachment, a supplementary device is employed and consists of shafts or harness, placed between the jacquard and the reed. This front harness raises a certain number of threads (corresponding to the weave desired) which have been lowered by the jacquard and lowers others which have been raised by the jacquard. It is evident that, in order to preserve the figure formed by the jacquard, only a small portion of the raised threads can be lowered, or of the lowered threads raised.

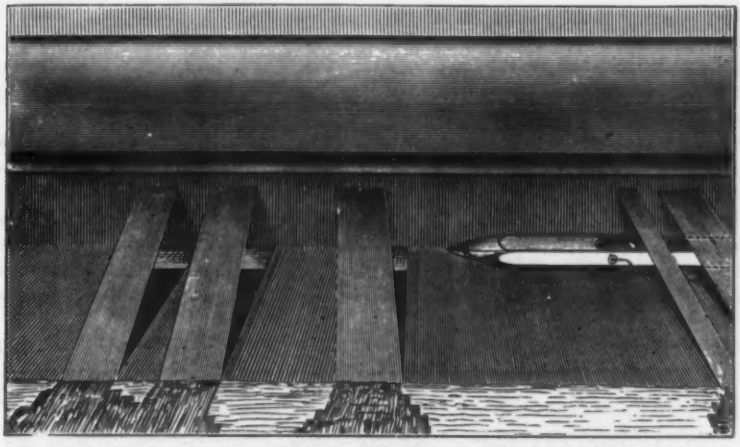


FIG. 6.

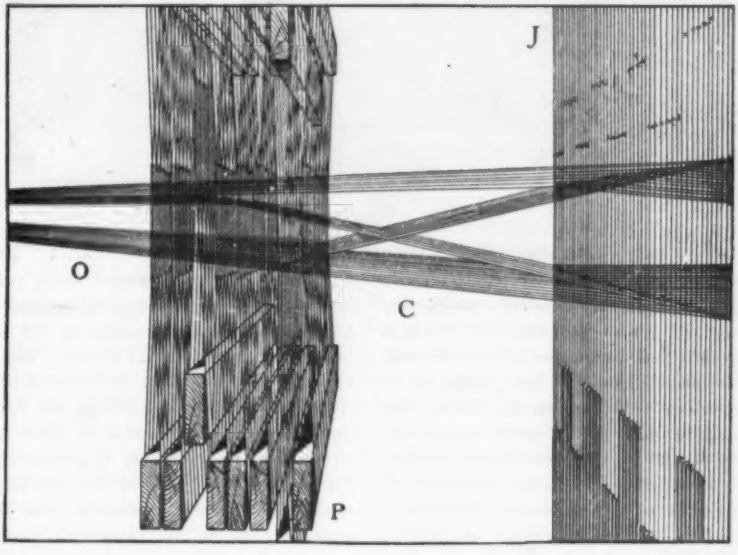


FIG. 7.

These front harnesses are worked

by a device independent of the jacquard, consequently the building of the shed consists of two distinct operations: 1, the movement of the jacquard mails; 2, the movement of the front harness. To permit these two operations, it is necessary that the formation of the shed by the jacquard be not interfered with by the front harness. This object is obtained by a specially constructed heddle on the latter.

The construction of this heddle will be readily understood by reference to Fig. 1. On each of the hooks Pt. and Ph. of the jacquard are connected four of the cords Hs, which pass through the opening of the rack, R, then through the comber board, Su. Four of these threads are drawn through each mail, so that each hook controls a group of four consecutive threads. These threads are drawn, not only through the jacquard mails, but also singly through the heddles of the front harness, S1 to S8. These heddles are made with long loops in place of eyes, as shown. When in central position they do not interfere with the movement of the thread by the jacquard. Raising or lowering them raises or lowers the threads which they control.

The drawing, Fig. 1, represents the hook, Ph, raised, and the hook, Pt, lowered, which results in the threads 1 to 4 being raised, and 5 to 8 lowered. In this way, a group of consecutive threads will be raised or lowered.

Fig. 6 is a perspective view in front of the reed of the shed formed by the jacquard.

The stitching or tying of this figure shed is done by the front harness. This double action of forming the shed gives rise to the greatest objection to damask weaving, viz., the so-called cross shed which is represented at Kf, Fig. 1, and of which a perspective view is given at C, Fig. 7. Fig. 6 represents the jacquard shed, part of the threads being raised in groups, leaving wide spaces, where no threads have been raised or lowered. Fig. 8 is a perspective view of the shed in front of the harness, after the front harness have been moved to form the cross shed. Fig. 7 is a perspective taken from the side behind the reed, showing the third harness and the seventh. J is the jacquard, C the cross shed, O the open shed.

By this cross shed, the warp yarn is subject to a double deflection, and owing to the increased strain, must be correspondingly strong. It is there-

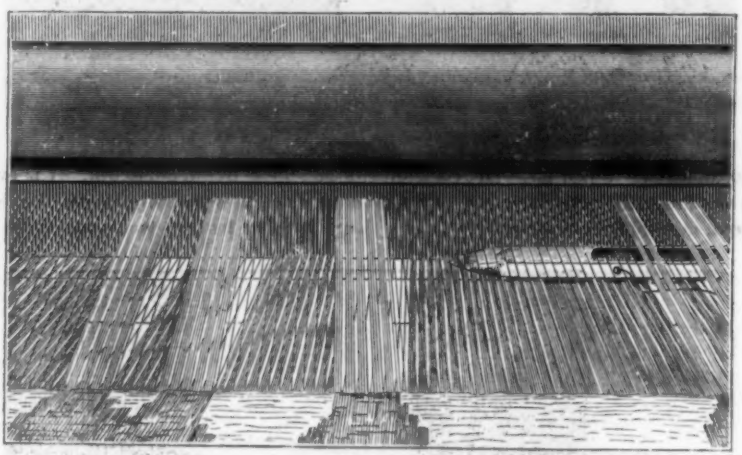


FIG. 8.

fore absolutely necessary in damask weaving that the best material only be used for warp. In order to relieve the strain caused by the cross shed, various devices are employed. For this purpose threads are not drawn in the mails shown at Figs. 2 and 4, but to the cord controlling a group of threads are attached as many separate mails as there are threads in the groups, Fig. 3. Each heald has a corresponding light lingo. If the threads which have been lowered by the jacquard are raised by the front harness, these light weights are raised and the strain thus relieved.

Another device for relieving the tension of the cross shed is shown at Fig. 5, and is called the half harness. Two cross bars, G, are placed under the warp between the jacquard healds and the yarn beam. Half healds, Hh, supported by strips or rods, are placed between these bars, and the threads are drawn through the eyes. By this arrangement the warp threads are depressed below the horizontal. When the cross shed is formed, the strain on the warp is relieved by these light weights being lifted up into the position shown at 7, Fig. 8. The objection to this method is that the space behind the jacquard must be greater, and that the work of drawing-in is greatly increased. It results, however, in relieving the yarn of much of the strain, so that finer yarn can be used.

Waste in Spinning Rooms.

I will treat the subject of making waste in the spinning room upon the assumption of what is never the fact in practice, that the work is delivered to this room in perfect condition, in order to narrow the discussion down to the conditions in the spinning room.

In the first place skilled labor should be secured and should be paid enough to keep the hands working steadily. Every manager is familiar with the evils connected with frequent changes in mills, and among these may be mentioned an increase in the percentage of waste.

When the overseer comes into his room in the morning he should see that the temperature and humidity are at the right point for the best results. It does not take a practical man very long to determine at what temperature and humidity the room should be kept, in order to get the best results in spinning.

There are many other things that affect waste in addition to the skill of the hands and the degree of temperature and humidity. Every part of the machinery must be kept clean. Let us suppose that we are spinning No. 10 hosiery yarn ⅞-inch stock from two bank roving with a 10 draft and 9½ turns of twist per inch, the mules running 60 hours per week. To keep the parts in good order, a mule should be cleaned at least once in four weeks; during that time the back and middle roller should be kept scrupulously clean. On coarse work the middle roller will accumulate dirt that clogs up the rolls and breaks down the threads. If, however, these rolls are cleaned every week, very little trouble will result.

The rolls should be oiled with pure tallow mixed to the consistency of thick cream and put on warm. Care should be taken not to get any of the oil on the leather as this will cause the surface of the leather to rough up, resulting in frequent breaking of the threads. This roughness also causes the top-cleaner to lap, making lumps instead of a nice smooth lap. These lumps fall between the rolls and break the threads down. This trouble will be found in most mills.

Then again the top roller may not be adjusted in a perpendicular line with the bottom roll. This may seem unreasonable, and one may say: "Well, set your rollers according to the staple and then you will be right." This is true, but it is essential to have the top rollers as well as the bottom in the right position. It is necessary to get the work so arranged that

the spinner can sit down and watch it, instead of sprinting round the room as if he were in a six-day foot race.

Another point to be observed, and one that is generally overlooked, is the unevenness of the roller covering. One side of the roller may be covered thicker than the other side. This can only be discovered by placing the rolls in an adjusting machine or on a level board, and then looking between the rollers and the straight edge. The thicker side of the roller will draw the yarn through the middle roll better than the thinner side. This causes lots of trouble and is especially liable to occur in the South, as the covering down there is now being done by mere novices.

Another important point is the wind of the cop. This should be firm and hard. The incline should be set so as to lock deep enough and not allow any slack when backing off, particularly after doffing. Recently a little device has been brought out that will cause the mules to cross bind during winding. It is very simple and can be placed on any mule at the top of the incline on the copping rail. This device can be made by any mill machinist.

The spindles, bottoms and bolsters should be kept well oiled. This oiling should be done at doffing time. The doffers should pack all the cops carefully in boxes and leave out all defective work for the spinner to inspect. These imperfect cops should be placed in a box in each alley and picked up twice a week. In this way, the overseer can keep track of the work done on each machine and apply the proper remedy for any bad work that may appear.

The size of the rollers is a very important thing. A roller with six threads makes more trouble than one with four or two threads. The former requires more care and needs covering oftener because the traverse is shorter. They are also more expensive and the covers require more leather.

The weight on the top roller should be carefully adjusted. Coarse work does not require so much weight as fine work. Care should be taken that each back weight is on the same notch. I have frequently seen spinning rooms where some of the back weights would be at one end of the lever and some at the other. This causes unevenness, bad work, soft cops, etc.

Good fixers are another essential thing for a properly managed spinning room. If the mule is not adjusted properly it will not make the changes at the proper time. Frictions will frequently become struck, tearing quadrants to pieces and throwing the back shaft out, and sometimes twisting the carriage out of shape. Of course the spinner himself may be to blame for this trouble.

I have seen cases where the steel rollers were set too far apart and the spinners were compelled to have their knives or roller hooks ready from morning to night to pull laps from the rolls. When such a difficulty arises the stock should be carefully measured and the rollers adjusted accordingly.

The small help, such as the back boys, should not be allowed to take the bobbins from the creels when they have two rows of roving in them. They are very liable to do this, and a watch should be kept upon them and, if they are caught at such work, should be made to pay for the waste.

The floor should be kept clean. It is a very good idea to tack cloth to the bottom of the carriage and allow it to drag on the floor continuously. This will keep down all the fly waste that would otherwise get on the yarn at sweeping time. The cleaning of boards and spindle doors should be done twice a day, as a surprising amount of lint will gather there. The reels should be blown off twice every day. Two spinners should do this together, as this will keep the lint in the alley back of the mule.

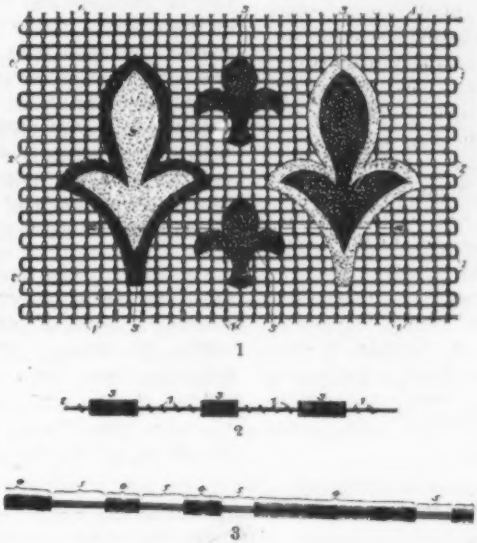
Strict discipline should be maintained throughout the room. The machinery should be kept well oiled, and

it may be said that discipline is the oil that should be applied to the help. They should be used fairly and the overseer should see that they use the mill in the same way.

LAKEWOOD.

A Chenille Fabric.

A fabric shown at Fig. 1, having chenille figures in imitation of figures produced by hand embroidery has been recently patented. The figures appear alike on both faces of the fabric; the method of weaving adopted is simple and figures of any desired coloring or shading may be readily produced.



1

2

3

Fig. 2 is a transverse section of the cloth, that is to say, taken in the direction of the filling; Fig. 3 is an illustration of the filling thread used in weaving this fabric.

The fabric shown in Fig. 1 is composed of warp-threads, 1, and weft-threads, 2, interwoven in any ordinary manner so as to produce a gauze, open-work, or leno fabric, the weft-threads, 2, having at appropriate intervals bunches or tufts of chenille yarn, which in the completed fabric are so disposed with reference to each other as to produce the desired figures, 3, which may be either plain or may be as elaborately colored as desired.

In producing these weft-threads the strands, 2, are used as warp-threads in an ordinary chenille-weaving loom and are interwoven with the chenille weft-threads; instead of weaving a continuous fabric, as usual, these chenille-weft threads are introduced so as to form strips or bands with intervening spaces formed by taking up any desired length of the warp-threads without inserting any of the chenille-weft threads, the result when the fabric is severed being a series of threads or strands such as shown in Fig. 3, in which the chenille-threads are disposed in bunches or tufts, 4, with intervening clear spaces, 5.

The bunches or tufts are so arranged that, when the threads or strands are used as weft-threads in weaving the final fabric, the bunches or tufts of chenille in successive picks will form the desired figures upon the fabric, these figures appearing the same upon both faces of the fabric owing to the open-work or gauze character of the body of the fabric.

When a double-faced fabric is not

desired, a backing fabric of any appropriate character may be combined with the face fabric having the chenille figures thereon.

The adoption of the gauze-weave prevents the beating up of the weft-threads so closely as to render too compact the chenille-carrying portions of the same; hence the chenille figures have the soft loosely-woven qualities characteristic of ordinary chenille goods, the fabric having substantially the same effect as though the figures were produced by hand embroidery.

While the gauze-weave is preferable, it is not essential, since a plain weave could be adopted if there was sufficient take-up of the warp-threads between successive picks of weft-thread to insure space for the reception of the chenille-carrying portions of the weft-thread without undue beating up of the figures.

In some cases the strands having the spaced or separated tufts of chenille may be used as warp-threads instead of weft-threads, although the latter can be long enough for one repeat of the pattern, whereas if used as warp a much greater number of strands would be required and the operation of weaving the fabric would be more complex.

—An invention by a Blackburn, Eng., man, designed to abolish the process of steaming in weaving sheds, is shortly to be put to a practical test. The appliance is in the form of a small tank fixed between the beam and the crank shaft, and motion is given to a brush in the tank or trough by a strap connecting the brush and the crank shaft. The Cotton Factory Times states that this revolving brush gives off moisture fourteen times faster than natural evaporation, and being placed close to the twist weaving over it, gives the twist the required moisture in all weathers, and thus affords greater ease in working, and consequently larger production of cloth.

—The loss of heat due to the presence of scale in steam boilers is frequently overestimated, and depends upon the quality as well as the thickness of the incrustation. A dense hard scale may cause a considerable loss of efficiency and prove a source of great danger, while a more porous coating, although thicker, may cause a very slight loss of efficiency. Experiments made recently in Germany indicated that a hard scale 1/20th inch thick caused a loss of 9 1/2 per cent., while other scales, much thicker, but of a porous nature, had little effect on the efficiency of the boiler.

—A steam boiler, the invention of two Germans, is described in foreign journals as being a double boiler, one within the other. The inner one holds the water, while the outer one is filled with oil. The heat applied to the latter heats the oil and indirectly the water in the inner boiler. The

FIG. 1.

FIG. 2.

article describing this apparatus states that the advantage consists in the much higher boiling point of oil, which permits of a higher temperature, and thicker boiler plates without danger of injury to the metal.

—The world rewards the counterfeit of merit more frequently than merit itself—La Rochefoucauld.

WOOLEN DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Finishing Wool and Mixed Fabrics.

VII.

BY N. REISER.

Translated from the German for the Textile World.

Continued from October.

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I knew a case where a manufacturer had been troubled for years with shaded goods, and also with badly smelling yarn. He changed his finisher repeatedly, and yet did not succeed in getting his goods cleaned. His yarn trade disappeared completely, and the cloths were very unpopular in the market. I urged him to make a test of the red oil which he used on the raw stock, and it was found to contain ten per cent. of mineral oil.

If with good oil and soap the goods come out dirty, the quality of the water should be tested. The best water for scouring is rain water, but since this is not available in a sufficient quantity, manufacturers are compelled to resort to rivers, springs and public water works. Water from public water works is seldom well suited for scouring and fulling, as it is apt to contain a large quality of lime or other substance which converts soap into an unsaponifiable substance. It has been stated by a high authority that water from public works frequently contains such a large quantity of lime that a mill using 1750 cubic feet of water daily will lose six dollars' worth of soap per day through the action of this lime.

Soap should be manufactured from pure, clean fats and oils, saponified with potash, so as to be free from unsaponifiable fat, and should contain on an average 40 per cent. of fatty acid. The merit of a soap depends upon the proportion of fat and alkali which it contains, and is in direct proportion to the quantity of fat.

It is impossible for even the most experienced soap dealer to determine the quality of a soap by mere inspection. It must be analyzed in order to determine first the proportions of fat and soda, and second, the quality of the fats and oils used. As a matter of course a soap manufacturer who purchases the best quality of raw material is compelled to ask more for his product. One soap containing 2 per cent. more fat than another is worth about one-eighth of a cent per pound more.

It is impossible to deny the oft repeated statement that a fuller or scourer will generally use as large a quantity of an expensive soap as of a cheaper grade to do the work. If the operative is accustomed to use four pailfuls of a soap solution on a set of pieces, he is very apt to do this regardless of the quality of the soap. The only way to remedy this difficulty is to vary the solution, reducing the percentage of soap when the quality improves, and leave the workman to apply the same quantity of soap solution in all cases.

What is to be done if the finished goods are unclean and emit an odor in spite of the use of good soap? The scouring machine is filled with water heated to 80° F., and a soap solution containing a certain proportion of ammonia is added. The unclean pieces are then run in this liquor for about fifteen minutes until the grease or

dirt remaining in the goods has been dissolved by the liquor, when the goods are well rinsed.

If the goods contain a large percentage of low shoddy or carbonized stock, which has been imperfectly neutralized, the pieces should be run in a two or three per cent. boiling soda solution for about ten minutes. If the liquor becomes very dirty, it should be run off and a fresh bath substituted. In this way much dirt, acid and other matter is removed from the goods, which would otherwise destroy a large quantity of soap. I have known of cases where the workman said, "The soap is too weak. It is good for nothing. I have already used 12 pailfuls of soap and I cannot get a lather." In such cases I have handled the goods as previously described, and found three pailfuls of soap were sufficient to thoroughly clean the cloth. This shows that nine pailfuls were wasted by the old method. The same process may be adopted for handling goods which have soured by reason of being woven in a wet state, also for goods containing more or less loose dye. There need be no fear of injuring the color as long as the goods are in the grease, as in this condition a two or three per cent. soda solution has no influence on the color.

A thorough cleansing is essential to the proper finishing of woolen goods. It will be found advantageous to use soft water for making the fulling soap solution, as in this way the soap is kept neutral and the formation of lime salts is prevented. If, however, soft water is not available, from two to three per cent. of soda should be added to the water used for making soap solution before the soap is dissolved in it.

A good fulling soap should be neutral and contain from 60 to 62 parts of fatty acid; it should be liquid at 50° F. to easily penetrate the goods. It is advisable to apply the full quantity of soap at the beginning of fulling process. After that a little water should be added from time to time, to prevent the heating of the goods, and to supply the deficiency caused by evaporation. By keeping the goods moist chafing is prevented.

A mistake is often made to assume that the harder the soap, the dryer it is. The hardness of the soap is due to the particular kind of fat used. A tallow gives a harder soap than red oil or olive oil. Olive and red oil soaps are softer in summer than in winter. A soap containing 50 per cent. of water may be as hard as another containing only 25 per cent. of water. The experienced finisher will quickly find out which is the best soap for his use. For slow fulling goods a red oil seed soap works well. For goods fulling quickly, a soap made of olive and red oil will be found suitable, while for very light goods an olive oil soap is recommended. All fulling soaps must be neutral; i. e., contain no free alkali.

Soda: Good soda dissolved in a boiling water gives a clear solution without any appreciable sediment. The soda should be prepared for use by dissolving 100 lbs. in 25 gallons of boiling water. A gallon of this mixture is then diluted with nine gallons of water; the resulting mixture will stand at 3° B., and can be mixed with the soap in this condition.

Ammonia: Ammonia will be found very useful when it is desired to hasten the scouring process and at the same time handle the color as gently as possible. Ammonia increases the working qualities of the soap, and the grease in the goods is more quickly started. For weak colors 10 per cent. and for good colors 20 per cent. of ammonia may be used.

If it is found that the grease in the goods does not start readily, ammonia may be mixed with the cold soap. If the water is hard, the ammonia should be mixed with warm water and soap. Ammonia is very useful in scouring army goods, beavers and

similar fabrics which are difficult to cleanse. In such cases the ammonia should not be used until the goods are fairly well cleaned. The washer is then half emptied and the diluted ammonia applied. Care should be taken that the ammonia mixture does not strike direct upon the fabric, but becomes first mixed with water, otherwise the colors may be altered.

Potash: Potash is to be preferred to soda in the finishing process, but on account of its expense, is not used very largely. Its action upon the fibre is not as severe as soda, and if two pieces, one finished with soda and the other with potash, are placed side by side, the difference in the handle is very apparent.

In making a potash solution, the potash should be added to cold water at first, and then the mixture gradually heated. A less quantity of potash than of soda should be used, as the former is stronger. Potash must be kept tight enclosed while in storage, otherwise it deteriorates by exposure to the air.

I have had many opportunities of getting the opinions of manufacturers in regard to the advantages of their manufacturing their own soap. Nearly all, without exception, were of the opinion that it was better to purchase their soaps from an established and responsible soap maker. The soap does not cost any more by this method, and if poor soap is furnished, it can be returned, whereas, if a manufacturer makes his own soap, it is frequently necessary to use batches which are not up to the standard. There may, however, be exceptional circumstances in which it would be for the interest of a manufacturer to make his own soap.

(To be continued.)

—The man who will each day make a searching examination of his own life will discover quickly how little he is deserving of happiness.—Joseph de Maistre.

A New Felting Material.

Two fibres, growing in tropical America and known as "krapok" and "ceiba," have heretofore been utilized only for upholstery purposes, the staple being too brittle and elastic to permit of its being spun.

A native of Italy has recently obtained a U. S. patent for a process of rendering these fibres capable of being fulled. He states that the fibres have a roughness not found in cotton and have some analogy to wool, though somewhat finer, brighter, and softer. The fibre is pierced by a channel of about one-tenth of its diameter. While the fibre of cotton is somewhat flat, that of kapok and ceiba is quite round and rough on its surface, whence the possibility of using it in the manufacture of felt. The central channel is empty, as in cotton, while that of wool is filled with medullary matter. Though similar to wool on its surface, the new fibre is somewhat smaller.

According to the process of this invention such fibres are rendered capable of felting by submitting them after a thorough cleansing to oxidating, disintegrating, and roughening action upon the outer portion. This is effected by means of baths, the first of which contains mercury in solution. The second bath contains chromic acid and is made from substances capable of developing such acid—such, for example, as bichromate of potash, from which chromic acid can be developed by sulphuric acid. To this bath may be added other substances possessing properties such as fit them to co-operate to improve the felting qualities of the fibre—such, for instance, as gallic acid, nitric acid, and hydrochloric acid and their compounds or derivatives. In conjunction with these acids there may be employed tannin, enocianine (the coloring-matter of wine), or sulphate of copper or iron.

The said fibres are first saturated with water. The vegetable fibres are

allowed to remain in this bath for a time, usually about ten to fifteen minutes, and they are then removed from the bath and placed and allowed to remain in another vessel for about twenty-five hours to dry them and then they are submitted to the action of a second bath composed of bichromate of potash, two to six per cent., by weight, of the weight of fibre treated; tannic acid, one to two per cent.; acetic acid, one to two per cent.; water, twenty-five times the weight of fibre treated, and acid coloring-matters of the desired color and in a quantity corresponding to the degree of coloring desired.

The vegetable fibres are plunged into the second bath at a temperature of about 40 degrees centigrade, and then the temperature is raised to about 90 degrees centigrade. After they have remained from ten to fifteen minutes at this temperature they are removed to another vessel, where they are allowed to stand alone for about twenty-four hours, and, lastly, dried by the ordinary processes.

A further action may be exerted upon the fibres so prepared by means of sulphuric acid during the fulling; it will be well to add in the fulling-machine one per cent. of bichromate of potash, tincture of enocianina or other oxidating disintegrating and roughening agents, and coloring matters which will vary in quality and proportions in accordance with the requirements of practice.

—An alarm attachment for carding machines forms the subject of a recent patent; its primary object is to provide a simple and inexpensive device which will sound an alarm when the wool within the feed is nearly exhausted or when the roving breaks; it is especially adapted for use upon Bramwell and Bates feeds. A bracket is provided, to which are pivoted strips each of which is secured to a wire of an electric circuit. These strips are thrown into contact with each other, thereby forming a circuit and sounding a suitable alarm which will indicate the condition of the feed. Different means are required to operate these contact-strips, depending on the form of machine to which the alarm is applied.

A Woven Fabric.

The accompanying drawings are illustrations of a woven fabric recently patented in this country.

The object is to produce hollow ribs or tucks in a piece of woven fabric by the use of warp-threads, each engaging with the weft threads first on one side and then on the other side of a group of ordinary warp-threads and under such tension as to draw together or bunch the intervening web, so as to cause the same to rise and form a hollow rib on the face of the fabric.

In the accompanying drawings, Fig. 1 is a view of a piece of woven fabric having ribs formed in accordance with this invention. Fig. 2 is an enlarged section of part of the fabric, taken on the line, a a, or in the direction of the weft threads; and Fig. 3 is an enlarged view of a number of the warp and weft threads, showing the method of weaving, the threads being separated from each other so that the course of each thread can be more clearly seen.

Heretofore in producing a ribbed effect upon a woven fabric it has been usual to employ a cord running either in the direction of the warp or the weft and overlaid and tied down by the weft threads or warp threads of the fabric. By this new method the necessity of using such a filling cord is avoided and a hollow rib or tuck is formed in the fabric in the following manner:

In Fig. 3 of the drawings, 1 represents the ordinary warp threads of the fabric, and 2 the weft threads.

At intervals throughout the fabric warp threads, 3, are employed, each of which after engaging with one or more of the weft threads is carried laterally under any desired number of

regular warp threads, 1, before engaging with a subsequently inserted weft thread or threads.

As shown in Fig. 3, the warp thread, 3, passes under four of the regular warp threads, 1, between its successive interweavings with the weft threads, 2.

If this warp thread, 3, is under considerable tension, it will have a tendency to straighten out when the opportunity affords, and, consequently, the bights of the waved thread will approach each other with the effect of bunching and raising up the web of fabric formed by the interwoven warp and weft threads, 1 and 2, lying between the points of engagement of the warp thread, 3, with weft threads, 2, the effect being the production of a hollow rib or tuck upon the face of the fabric, as shown in Fig. 2.

In order to increase the effect of this rib or tuck, it is preferable to change the weave of the strip of fabric composing the same from that of the fabric flanking the same. For instance, the flanking fabric may be woven plain and the strip of fabric forming the rib or tuck may be woven with some form of twill, as shown, for instance, in Fig. 1.

By this means, it is claimed, tucks similar to those produced in woven fabric by a special and subsequent tucking operation can be formed during the weaving of the fabric, and the necessity of resorting to cords for the purpose of forming raised ribs on the fabric is wholly obviated, in either case materially reducing the expense of the fabric, and, as compared with the corded fabric, reducing the weight and therefore rendering it more acceptable for many uses.

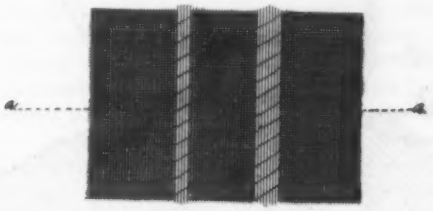


FIG. 1

FIG. 2

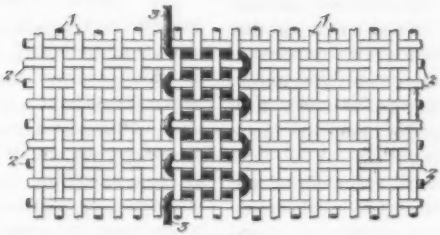


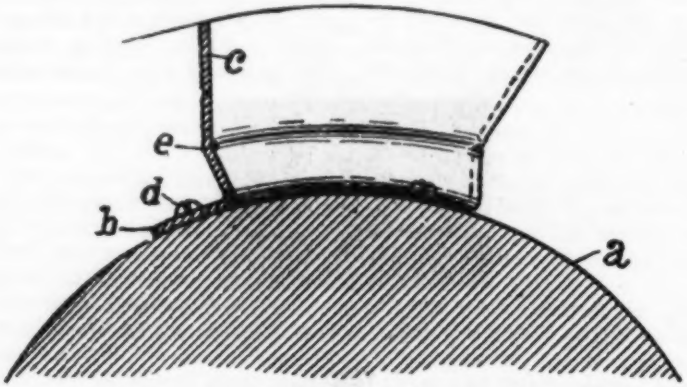
FIG. 3

—A new method of imparting a silk lustre to woven fabrics has been patented in Germany. According to the description given, from 120 to 300 minute corrugations are pressed into the fabric. These can not be distinguished by the naked eye, but, it is claimed, impart a silk-like lustre to the surface of the goods. It is evidently a case where seeing is believing.

A Spiral Shearing Blade.

A form of spiral blade for shear revolvers, which is in use in Germany and has recently been patented in this country, is shown in the accompanying illustration.

The inventor states that hitherto the knives in shearing machines were either straight in their cross-section or curved. Being secured to the periphery of a rotating cylinder, the straight blade would at all times show the same unfavorable cutting angle, while the cutting angle of the curved blade would grow constantly worse, as wear shortened the knife. These disadvantages are avoided, it is claimed, by giving the blade the form shown in the illustration.



Upon the rotating cylinder is secured the foot, b, of the shearing knife, by means of screws or otherwise. The part of the knife, c, between the foot, b, and the knee, e, is not quite radial, but leans toward the foot, b, which form, in connection with the knee, e, gives great strength to the knife, though only consisting of thin sheet steel.

From the knee outward the blade of the knife is kept straight, and a line drawn through its front and prolonged rearward would not touch the axial line of the knife cylinder, but go through a point intermediate said axial line and the periphery of the cylinder.

It is claimed that by means of this cross-section the most advantageous cutting angle of the shearing knife will remain constantly acute until the blade of the knife is worn down to the knee, and the stability of the knife improved considerably, so as to facilitate the shearing process to a marked degree.

The Shrinkage of Woolens in Dyeing and Finishing.

(Continued from October.)

The steam lustring fixes the breadth and length imparted by the preceding tentering and drying, and in this manner they receive their ready breadth in a more natural manner. Piece-dyed goods of this kind, however, must be left a little broader, as their shrinking capacity, not being weakened by mordanting and boiling, is stronger, in consequence of which they will generally shrink afterwards in washing and gigging. Owing to their natural elasticity, these stuffs will also stretch more or less in length. This stretching in length is in most cases just as disagreeable as the shrinking in breadth, because the stipulated relative weight of the goods is disarranged thereby.

Let us next examine in what manner the several operations subsequent to fulling are active in producing a change of dimensions of woolen goods. The washing is indisputably the principal factor. The fact that

soap (an agent which promotes the felting process) is employed, prolongs this process. With pieces that are not fulled to the complete exhaustion of their felting capacity, an after-felting and shrinkage in washing is unavoidable. But it takes place only in breadth corresponding to the mechanical treatment in washing—viz., by drawing in lengthwise and applying pressure, whereby the cloth is stretched in length.

The temperature of the bath used for washing is also an important factor. It is well known that many stuffs after-felt, if washed with hot water, but do not when treated with cold.

Cloth is now rarely carbonized after fulling, this operation generally preceding the fulling. It is necessary, however, under certain circumstances, and it is perhaps proper to remark that this process also causes a stretching and shrinkage. The cloth, by the treatment with acid at a high temperature, becomes looser in feel, and the texture is so loosened that, when neutralized in the washing machine, it stretches to a considerable degree, as the author has ascertained from repeated trials.

The gigging operation is another process which causes a change of dimensions. The cloth must be at a certain tension when passing the gig roll. This tension, of course, can be regulated so that when treating light and loose cloth an undue stretching may be prevented by the brake arrangement. The stretching during the process is particularly favored when loosening the felt—at least on one side, generally down to the texture of the cloth, which becomes softer and more elastic, and consequently more inclined to stretch. This circumstance is happily offset by another—viz., cloth which is from its nature inclined to stretch (for example, light, and loose goods) is only moderately gigged. It is therefore not so long exposed to the stretching process as cloth which, in consequence of its denser texture and more compact felt, offers much greater resistance to the stretching.

In double-gig machines, the greater or less tension depends partly upon their construction. The finisher who has a number of them at his disposal can easily avoid trouble by choosing one best suited to the cloth. When the gigged cloth is submitted to a wet lustring (boiling) directly after having been napped, a slight stretching in length may be expected. This is due not so much to the rolling up of the cloth, which is generally accomplished with little tension, as to the subsequent rinsing, if the cloth, softened by the hot-water bath, is entered into the washing machine, in which it is often treated for some time in full water.

For piece-dyed goods, the operation of dyeing often causes a change in the dimensions, which increases with the degree of the felting capacity of the wool. The greatest change is produced by dyeing in the kettle. This is less frequently the case with vat-blue goods, which are but little stretched in length, unless the antiquated method of drawing them through a board with a small opening is resorted to. In boiling, the cloth is apt to after-felt if the staple has any inclination to felting. This is due to the boiling up of the bath against the stuff firmly lying against the side of the kettle. For this reason the cloth shrinks by boiling not only in length, but also in breadth. Still, the loss in length is generally restored again by the stretching when rinsing the dyed stuff.

In order to prevent this change of dimension in the cloth by the boiling dyebath, as well as the formation of creases and cockles, and in napped goods the entangling of the nap, all the goods—at least those of a better class—to be dyed in the kettle are steam lustred previously, whereby the position of the wool fibres is fixed. If I may use the expression, the fibre is

"killed" by the steam lustring—that is, it is deprived more or less of its shrinking capacity, after which it appears to be less inclined to change in form and position.

The difference in behavior between sharply steam lustred and non-lustred cloth is very marked as regards its inclination to shrink during or after dyeing. It is true, the cloth will stretch in this steam lustring in consequence of its being wrapped tightly round the cylinder, which may, according to its elasticity, amount to 4 per cent., and this must be taken into account when deciding upon the extent to which the cloth is likely to shrink.

Since the cloth is to be dried before steam lustring, some notice can at this time be taken of the stretching in length by the lustring. This can be counteracted by tentering the piece more in breadth than length. Besides this, in the case of light and loose stuffs, when the finisher may count on a shrinkage in dyeing in spite of the steam lustring, an incidental difference may be avoided by tentering these stuffs a little more in breadth before the steam lustring. Experience and close observation only will enable the finisher to determine the exact amount. The treatment of piece-dyed worsteds upon the crabbing machine answers the same purpose as steam lustring before dyeing.

Although incidental losses in breadth may be equalized again by the tentering and drying after the teaseling, still this cannot be applied nearly so extensively today—when the goods must be delivered ready for the needle—as it could formerly, when this stipulation was not regarded as so important. Nevertheless, small differences may always be corrected by the tentering, because according to the larger or smaller shrinkage capacity of a stuff, a part of the additional length or breadth caused by tentering will remain after making ready for the needle. This takes place in a reverse ratio—that is, the less capacity the cloth has to shrink, the better it retains the stretch imparted to it. For instance:—

Let us take a piece of wool dyed, plain cloth, strongly fulled, and well gigged. It must, when ready, be 55 inches wide, but in the course of the different shrinkings it was, after teaseling, reduced to 54¼ inches. When we tenter this piece in the ordinary manner—that is, stretch it in breadth 1 to 1½ inches, as is generally done, to smooth it well,—it will very likely return to its original breadth of 54½ inches when making it ready for the needle. But by spreading the piece double the quantity just stated—that is, from 2 to 3 inches,—we shall have it at least 55 inches wide finally.

More difficulty is experienced with stuffs of light fulling, the shrinking and felting capacity of which is not yet fully exhausted. They will shrink even while being made ready for the needle, and they must consequently be tentered very strongly, especially in breadth. It has happened to the writer that light cheviots and serges which before drying were fully as broad as demanded, a few pieces even exceeding the measure, after being made ready for the needle, had to be stretched again in breadth from 4 to 5 inches to give the required width.

The proportions of length and breadth are best regulated with goods intended to be steam lustred by tentering before steaming. The cloth retains the greater part of the length and breadth imparted to it by drying by the fixing process of steam lustring, and often it preserves it permanently. It is even possible to restore cloth lacking a good deal in breadth, or which shrank too much in length by the fulling, to the dimensions required by strong tentering either in length or breadth and thorough steam lustring.

KNITTING DEPARTMENT

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

The Knit Goods Situation.

Propitious weather conditions have been the means of creating considerable activity in the knit goods trade during the past few days, and trade prospects at the present writing are of the brightest. The crisp autumn air heralding the near approach of winter has enabled the retailer to get his stocks cleaned up in excellent shape, and for the last few days there has been a steady demand felt by manufacturers and jobbers for heavy weight goods.

Under these encouraging conditions, the jobber has been encouraged to look at sample lines of heavy weight goods for fall of 1902, and a number of fair sized orders on fleeces have already been booked. From present indications it would seem that prices on standard fleeces will be about 25 cents per dozen lower than last season, but aside from fleeces, prices on heavy weight goods will be little changed.

Prices on wool goods will probably be about the same as the prevailing prices of the present season and it is pleasing to note that an increased demand has been evidenced for pure wool goods of the higher grades.

Blacks, which have been in fair demand this season, are considered very favorably for the coming season, both in wool and cotton goods, much to the regret of the manufacturer who has little love for the making of black goods. It may also be noted that an increased demand for blacks in heavy weight goods, for immediate delivery has been in evidence during the past few weeks, and the supply is far from being sufficient to meet the demand.

The underwear market is well sold up on spring goods and many prominent lines have been withdrawn, although there are still some goods to sell. Prices hold fairly firm and no weakening is looked for.

Hosiery conditions are very satisfactory, and in the majority of cases lines are well sold up. As usual staple blacks have had the leading call.

A scarcity of heavy weight goods has resulted from the recent cold weather and the market has been cleaned up to such an extent that in many cases buyers have to wait for the goods to be made. While the buyer may be caused some little inconvenience by having to wait for his goods, the present shortage of stocks indicate a healthy market, and is much more to be desired than an overstocked market.

The greatly increased demand for sweaters, resulting in the complete clearing up of stocks of this class of goods, has been one of the striking features of the past few weeks. At the present time manufacturers are rushed to their utmost capacity and have more orders than they can properly handle. This increased demand is, undoubtedly, owing to this being the football season, but the demand is so much greater in proportion than in past seasons, that neither retailer or manufacturer was prepared for it.

For many weeks now not a word has been heard of the oft-talked-of but long-delayed underwear trust, and we are inclined to believe that the chances of its ever being consummated are few indeed.

Chemnitz manufacturers have all the orders booked that they can fill for some time to come. The market is sold up until March in nearly all lines

of ladies' lace goods, and Rembrandt and Richelieu ribs are coming in for a fair share of attention. The lace goods have been bought largely in blacks and whites with a fair proportion of colors, and lace embroidered goods have also sold well.

Herringbone soles are in strong demand, but there is little call for Maco feet goods. In men's half-hose, lace goods are also in great demand particularly with embroidery combinations, and in many cases considerable advances in prices have been made.

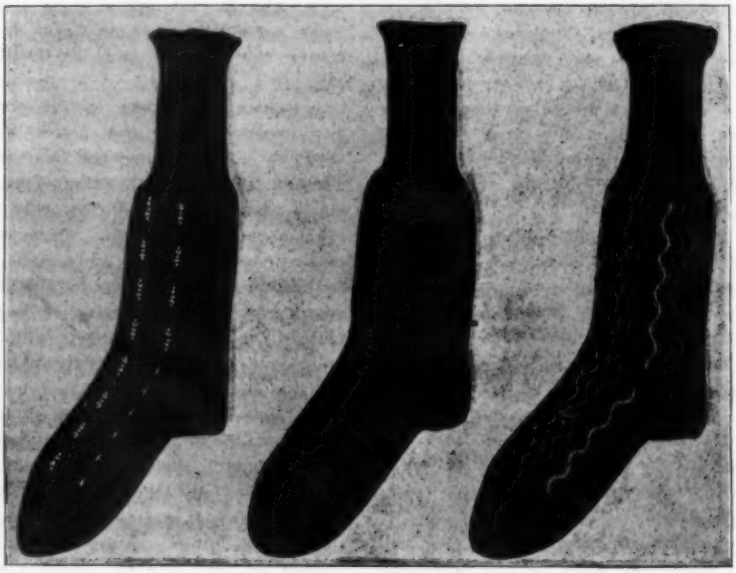


FIG. 1. FIG. 2. FIG. 3.

Fig. 1 represents a very neat and effective style of lace and embroidery combinations in fine lisle goods which can be landed to retail at 50 cents per pair, leaving a fair margin of profit for importer and retailer. This style is a striped lace pattern with small, neat figure embroidered in white silk.

In Fig. 2 is represented a style of heavy lisle goods in imitation lace patterns with woven circular stripes. This class of goods has been very favorably considered by many American buyers.

In addition to lace goods, there is, of course, a very good business being done on other lines of jacquards, etc., with the tendency toward striped patterns. Fig. 3 represents one of the newest styles which have been accorded a good reception. The pattern is an all-over perpendicular, wavy effect in two colorings. This has been one of the very newest productions and has been bought very freely by the high-class men's furnishing trade.

In the line of golf gloves, even at this early date, the market is almost entirely cleaned up and very little in desirable goods are offered for sale. Clasped cashmere gloves are also very scarce, principally owing to the fact that the majority of importers devoted almost their entire attention to golf gloves, to the exclusion of all other lines of fabric gloves.

—The dye works in Saxony are reported to be using an alloy of lead and antimony (hard lead, so-called) in place of copper for the pipes used in the dye vats. This is especially the case in wool dyeing where strong acid baths are used. This alloy is said not to affect the action of the dyes and to last much longer than copper.

Sizes of Knitting Machines for Different Sizes of Underwear.

A knit goods manufacturer has asked us what machine sizes are used for knitting the various sizes of ladies' underwear. Enquiries among knitters disclose a wide divergence in the practice of different mills.

As it is a question of general interest we give our readers the views of a number of knitters.

Editor Textile World:

I have found the following list of sizes for machines and ladies' underwear to answer well. No hard and fast rule can be laid down on this question as the size of the machine to be used depends greatly upon the subsequent treatment of the goods.

VESTS.

Sizes Cylinder.	Sizes Vests.
11 in	3
12 in.	4
13 in.	5
14 in.	6
15 in.	7
16 in.	8
17 in	9
18 in.	10

This is for cylinders cut 8 to 1 inch; Nos. 10, 10½, 9, 9½, etc., yarns.

Ratios for pants vary, but for patterns in general use the following are about right:

PANTS.

Sizes Cylinder.	Sizes Pants.
11 in.	3
12 in.	4
13 in.	5 and 6
14 in.	7 and 8
15 in.	9 and 10

On a pinch (to help out) have made 5 on 12 in.; 7 on 13 in.; 9 and 10 on 14 in.

LISLE GOODS (EGYPTIAN).

Run on size smaller cylinders (10 cuts per inch).

Sizes Cylinder.	Sizes.
10 in.	3
11 in.	4
12 in.	5
13 in.	6
14 in.	7
15 in.	8
16 in.	9
17 in.	10
18 in.	11

This is for unwashed, including bleached yarn goods.

Wash goods size larger as follows:

Sizes cylinder.	Sizes.
11 in.	3
12 in.	4
13 in.	5
14 in.	6
15 in.	7
16 in.	8
17 in.	9
18 in.	10

ROYAL.

Editor Textile World:

The particular size of knitting machines used for ladies' underwear depends a good deal on the weight of the goods, the size of yarn, whether the goods are knit on a roll or into a can or box, how they are brushed or napped and how they are handled throughout the mill.

For instance, if No. 8 yarn with a long stitch is used and the webbing falling loosely from the take-up into a can and then turned without lying on a roll, and the goods given a light nap so as not to stretch the fabric any, in fact, handled through every operation without any more stretching than is absolutely necessary, the goods will hold out two sizes wider than if a No. 12 yarn with a tight stitch is used, and the webbing wound on a roll from the take-up, then turned on a roll and kept on rolls through every operation up to the cutter.

Every operation throughout the mill where ribbed goods are stretched has a tendency to narrow the fabric, and if they are left on the roll any length of time the stitch will become set, and it is almost impossible to get the fabric back to the width at which the machine first knit it. Of course you can turn the goods over a wide spreader and let them set on the roll, but by this operation you get very uneven sizes.

Size 5 vest should measure across the bust not less than 13 inches and not over 14 inches; the bust should measure when finished, 12 inches long, waist 5½ inches long, and skirt 17½ inches long. Some manufacturers of cheap goods go under these sizes in order to get a light garment, and still have a good fabric.

To make a size 5 vest weighing 8 lbs. to the dozen I have used on 8 needles to the inch, No. 10 yarn on a 13 inch machine. These goods were handled throughout the mill without being rolled except when being turned for napper and after napping, and then were not allowed to stand. If I

could not get them right through without delay I would unroll them, and let the webbing lie loose in a box.

Ribbed goods must not be stretched or pulled any more than is absolutely necessary, otherwise the lengths and widths will not be anywhere near uniform.

Size 4 should be 1 inch narrower, and 1 inch shorter than size 5, and size 6 should be 1 inch wider and 1 inch longer, therefore should be knit on 12 inch and 14 inch machines respectively.

BADGER.

then size 3 on the top of each, taking care to keep them all smooth and even at the top, and see whether there is a uniform rise in each garment.

Usually there will be a difference in length, but not much in width. There is a standard length, but there is not so much said about the width. Most mills if they do not have just the right sized machines to make a uniform range of sizes, will knit with a tighter or looser stitch, thus making sizes 5 and 6 on one size machine, but they have as a result two different classes of web in the same line or style. It is surprising how many mills of good standing are doing this; in fact seven out of ten do it. There cannot be too much said about making sizes correct according to a standard measurement.

FINISHED MEASUREMENTS, EIGHT CUT TO INCH, 36 GAUGE NEEDLE.

Size of Machine	10 inch.	11 inch.	12 inch.	13 inch.
Size of Vest, to be made on above size machine	3 "	4 "	5 "	6 "
Bust measurement, shoulder to waist line	10½ "	11 "	11½ "	12 "
Waist, plain stitch	5 "	5 "	5 "	5 "
Skirt measurement, tuck	15½ "	16 "	16½ "	17 "
Total length	31 "	32 "	33 "	34 "

SLEEVES.

Size of Machine	3½ inch.	3¾ inch.	3¾ inch.	4 inch.
Size of sleeves, to be knit on above machines	3 "	4 "	5 "	6 "
Length of Sleeves	20 "	21 "	22 "	23 "
Cut arm-hole down to enter sleeve	8 "	8 "	8¼ "	8¼ "

Editor Textile World:

Ladies' rib underwear knit to shape are made on the following size machines. Size 3, 10 inch; size 4, 11 in. machine; size 5, 12 in. machine; size 6, 13 in. machine, all eight cuts per inch.

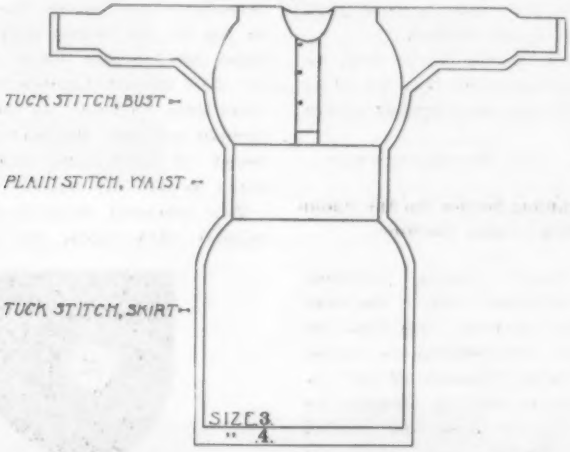
Some mills make two sizes on one machine where they are short of machines, but this is not good practice, the finest, best and most correct underwear are made on the sizes above mentioned.

One of the principal points in making underwear is to have a uniform rise of sizes. It is necessary to have a distinct difference between each size, one inch longer and usually one inch wider. But few manufacturers are half as careful about this point as they should be. To prove this, go into any large store and ask them to let you see a line or range of sizes of some one man's make, and take size 6 and lay it out straight and smooth on the counter; then lay size 5, then size 4,

Sleeves for ladies' ribbed underwear are often too small, and should be made on the following size machines: sleeves for size 3 garment on 3½-inch machine, same cut as body cylinder and dial; sizes 4 and 5 on 3¾-inch machines; size 6 on 4-inch machine. On heavy goods with the stitch well filled, it is better to make sizes 5 and 6 sleeves on a 4-inch machine.

I made Union Suits for three years with the sizes mentioned, in cotton and worsted, heavy and light weights, in lisle, worsted, and silk, with 10 cuts to the inch, and never had a complaint in a production of 150 dozen per day. I have also made ladies' goods, worsted and wool, as well as cotton, on machines of these

sizes. The following sketch and table give the sizes and dimensions of knit to shape ribbed worsted on cotton vests. TOGA.



Holes in Knit Goods.

I have been much interested in the question and answer appearing in the October issue of the Textile World in regard to cause of holes in knit goods.

I agree generally with the reply given to this inquiry, and, while it is impossible to state with certainty the cause of the difficulty, I wish to add something which may help the knitter making this inquiry and possibly others who have contended with the same difficulty.

I carefully examined the sample containing the defect and believe that the cause of the hole in this sample was defective yarn.

At the end of the short thread which I have raveled to call attention to it, is what is termed a nib by many but what I call dead cotton, that is, cotton which has not matured. If it is not taken out by the card, it acts the same in spinning and knitting as dead hair does in woolen yarn. At the hole in the sample can be seen a part of the nib just where the stitch is split. Wherever this nib comes in the yarn a fine place is made, and at this fine spot a needle or latch is sure to cut through; the result is a hole, which may not close until after two or more revolutions of the machine.

In spinning yarn, the mules should be in perfect order, leveled and properly squared and the carriage should not be too low, otherwise there will be trouble in the camp. I was called to a mill sometime ago by the manager, who told me he would have to quit business unless they improved the work. Claims were coming in daily for imperfections in the goods. These imperfections were caused by twits in the yarn. Years ago such defects would not have been noticed, but today the trade is much more critical and a mill must remove them, or go out of business.

After looking over the different departments of this mill, I discovered the cause of the trouble, and had one of the mules put in order. Before I left, the result was all that could be desired, the yarn from this mule being free from twits.

Twits will also occur when the mules are not squared properly, as one end of the carriage strikes in before the other causing irregularities in the thread. One of the reasons why twitty yarn is so frequently found is because only the large twits cause trouble. Holes such as the one in this sample are often made by the cloth being drawn too tight on the knitting machine. There should be ample space

between the cloth roll and needles, as in this way more elasticity is secured and the strain on the needles relieved. It will be found that if these matters are properly attended to, poor yarn can be successfully worked.

Twitty yarn should not be used, although on cheap goods it is not of so much importance, as napping covers the defect.

OLD SUPERINTENDENT.

A New Trimming Device on the Union Button Sewing Machine.

When button sewing machines were first introduced, one of the most objectionable features was that the threads ran from button to button, and after being trimmed off left unsightly ends sticking up through the holes, marring the finish and creating no end of disgust, even preventing the use of the machine by fastidious manufacturers.

Coupled with this annoying feature was the fact that a different style of stitch was employed on the machine,

a "parallel" stitch, while the trade had become accustomed by long usage to the "cross" stitch, the usual style employed by hand sewers.

These troublesome features always caused a great deal of contention, and consequent argument, often resulting in loss of sale of the machine. The work did look ragged, and was an eyesore to everyone handling the garment, besides the additional cost of trimming, and all sorts of means were resorted to by the operators to get the ends out of sight, even to tying the ends underneath on expensive garments.

Manufacturers will be pleased to learn that the Union Button Sewing Machine Co. is now applying to their machine a device for automatically trimming both upper and lower threads, which leaves the stitching on top of the button with a smooth finish, without any ragged ends making their unsightly appearance, at the same time securing the ends of both threads so that the operator is relieved of their care, and the next stitch is perfectly made.

This trimming device is simple and reliable, easy, quick, and positive of

movement, requiring no attention from the operator, and in no way is it detrimental to the machine. The speed of the machine is not interfered with, and since the operator is relieved of the care of the threads, she has just so much more time to feed and locate the buttons, thereby increasing the production; furthermore, when the garment leaves the machine, it is ready to be buttoned up, saving the cost of trimming.

The Union Button Sewing Machine Co., 164 High Street, Boston, Mass., is the sole owner of the device, and they are applying them as rapidly as they can to the old machines for a nominal sum, and their old customers may feel assured that they will serve them in turn with attention and dispatch. They were the first to introduce to the trade a machine for sewing on buttons successfully, and from time to time have improved their machine to meet the requirements of the trade, and increase the production.

Their time and attention has been wholly given to the subject of button sewing machines for many years, and the "Union" people can justly claim

to be masters of the art of button sewing.

This latest improvement has been thoroughly tested, and is of much in-

terest to the manufacturer, inasmuch as it not only saves price of labor, but produces a quality of work acceptable on the best garments.

Repairs in a Knitting Mill.

What are they and how can many of them be avoided? Some mills have a continual expense with repairs and changes, keeping things mixed and piled up from one end of the mill to the other. This is often the fault of the manager, and selling agent, who go out into the market, and get a great variety of samples which they try to duplicate, without any regard to the machinery installed in the mill. Many of these new goods require unlooked for repairs and changes.

A well ordered mill makes its own samples, which are best adapted to the machinery, and the managers do not try to make everything that is on the market, but stick to their own lines, and make new ones as the seasons roll around.

Some one may say that this has nothing to do with the repairs. A man in charge of any of the departments knows of the trials and troubles he has passed through, on account of changes resulting from trying to duplicate some other mill's goods with a different gauge and size of cylinder. I have known of a change in the size of yarn from No. 8 to No. 12 in order to get the weight and width of cloth to meet new ideas.

Take the case of a mill running on cotton yarn making on an average of 200 dozen per day fleece lined shirts and drawers, using No. 22 yarn on face and No. 4 on back, which are good running numbers for 20 and 22 gauge. The mill has a good machinist with lathe, taps, dies, and drills and all the necessary tools to do general repair work.

Cop yarn is used and the first thing to look into, is the winding, which is a much neglected process in many mills, and one of the most important in knitting mills. There we find that "cleanliness is next to godliness."

Good and proper winding is a great saving of labor and repairs farther on. Good winding is one-half of the knitting. A winder kept clean, and properly adjusted will do good work. The foreman over the winders must see that his belts and friction pulleys give the bobbin its proper speed, not being too tight or loose enough to slip, and that the cups and scraper guides to the builder are rightly adjusted. Every scraper which the yarn goes through, should be examined at least once a day.

All oil holes should be kept free and clear and a proper amount of good lubricating oil supplied. By these precautions, the boss winder avoids many repairs in his own room and in the knitting room.

Repairs to belts are often double what they should be. A good belt properly put together and well cared for will give little trouble. One great fault is in poor belting, which is bought with an eye to economy by some one without experience. We will take for instance, a pulley with a four-inch face both driver and driven. Some would say that a 2½ or 3-inch belt would be the most economical. While it is new such a narrow belt will do its work all right, but it has to be taken up quite often, and in a short time it has stretched so that the 3-inch belt is only 2½-inch on the pulley, and comes off if any extra strain is put on, consequently, it is kept tight as a fiddle string and is soon of no use, having caused lots of trouble and repairs. Try a 4-inch belt in the same place and a marked difference will be seen in the steady, even pull, and no slipping.

Suitable belts count in production, they require slight repairs, and with proper care will last a long time. This same rule holds good either with large or small belts; let them cover the pulley face, and half of the repairs to the belts will be avoided.

We will now pass on to the knitting machines. Thirteen tables, two cylinders to a table, should turn off 200 dozen per day, running at an average speed of from fifty to sixty-five revolutions a minute according to size of cylinder. With good winding the ordinary breakage of needles to a cylinder will range from ten to forty in ten hours, providing the needles are good, and the machine properly adjusted. Here comes in again the necessity of cleanliness, and oiling of bearings and burs. If a bur sticks on its arbor on account of dirt or for want of oil, it will necessitate repairs, a new cylinder of needles perhaps and quite a number of blades to straighten and smooth or replace with new ones.

Sometimes a small nick on a bur blade is hard to find, and makes a geed deal of waste and mending later on. The boss knitter should keep close watch of these things continually. A knitting machine must be treated carefully in order to give the best results.

Sewing machines give very little trouble if kept cleaned and oiled. The fixer becomes accustomed to all the little tricks of each machine, and can by looking at the seam generally put his hand on the trouble without tearing the machine all to pieces. The chief repairs are needles and re-adjusting to overcome some parts slightly worn.

I remember once, I was away from business for a few days, and our mechanic worked two and a half days trying to fix a Merrow Shell machine, and then gave it up. I came in the next day and fixed it in ten minutes. A man must know the mechanism of each machine, in order to be a good machine man. This rule will hold good with all machinery. ULME.

—Diogenes searched for an honest man five thousand years ago. Would he do that now when the species is better known?—De Premontal.

—A good deed is never lost. There is always such an unquenchable desire to make it known to all.—d'Houdetot.

SILK DEPARTMENT.

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The Fraying of Silk Yarn During the Operation of Dyeing.

The little tufts shown in the accompanying illustration which appear at more or less frequent intervals on silk yarn, resulting from the fraying of the thread, are frequently ascribed to the inferior quality of the silk, whereby the yarn is unable to stand the necessary friction in the operations of degumming and dyeing.

To settle this point, tests have been made in a silk conditioning house at Milan, Italy. The report giving the results of these tests begins by stating that the trouble is not of modern origin, and cannot, therefore, be attributed to modern methods of handling silk, since Leeuwenhock mentioned it in 1700. It then goes on to state that no serious difficulty is experienced with the goods if the tufts in the yarn do not number more than 100 to 150 per thousand meters.

Tests were made for the purpose of determining whether these tufts were more likely to occur in silk obtained from the interior of the cocoon. In some filatures the entire cocoon is reeled, whereas in other establishments it is the custom to let the last part of the cocoon go to waste, on the theory that it is an inferior quality of material. The tests made with royal Salonica yellow cocoons, which had been submitted to the processes of degumming and dyeing, showed no appreciable difference in the number of tufts in the silk coming from the interior and exterior of the cocoons.

The samples tested were 1900 meters in length and show the following results:

SAMPLES.	TUFTS PER 1000 M.	
	No. 1.	No. 2.
Exterior of cocoon	77	50
Interior of cocoon	61	58

Further tests were made to determine whether silk from cocoons of silk worms affected with botrytis bassiana offered less resistance to the operation of degumming and coloring. The results of these tests are shown in the following table and indicate that the cause is not to be found here:

FRAYED SILK.

SAMPLES.	No. 1.	No. 2.
Silk from affected cocoons	58	81
Silk from sound cocoons	39	58

The results of tests made with silk degummed and dyed in different establishments, show such a vast variation in the number of tufts or frayed ends in the yarn, that the conclusion could not be avoided that the difficulty was caused by the improper handling of the yarn in these processes.

Among the cases mentioned, that of a sample colored in the United States

was especially noteworthy. This sample contained 2439 tufts per thousand meters, while four other portions of the same batch of silk colored in European mills, contained 230, 219, 250 and 203 tufts per thousand meters respectively.

Six samples of dyed silk, weighted with tin, contained on an average 1200 tufts per meter. In some portions of the yarn the number reached 1600.

The yarn furnished for these tests was accompanied by a quantity of the raw silk from which it had been made. Portions of this raw silk were degummed and colored in a dyehouse in Lombardy and at the laboratory in Milan. The following table shows the comparative results:

	LENGTH EXAMINED. INCHES.	WHOLE NUMBER OF TUFTS.	TUFTS PER 1000 m.
Dyed in the United States, weighted with tin	10,800	12 979	1201
Dyed in the Laboratory, not weighted	10,800	1,001	92
Dyed in Lombardy, not weighted	10,800	1,025	95
Dyed in Lombardy, weighted with tin and neutralized with soda	10,800	921	85
Dyed in Lombardy, weighted with tin and phosphate of soda	10,800	1,381	165

From these results it is evident that the formation of these tufts is not due to the inferiority of the silk, but is caused by the methods of handling in degumming and dyeing.

As may be imagined, the effect of black dyeing upon the number of tufts is not less striking. A number of samples taken from the same lot, were sent to different establishments throughout Europe to be weighted and colored black, with the following results:

	TITRES. DENIERS.	WEIGHTING PER 100.	ELASTICITY.	STRENGTH.	MINERAL MATTER PER 100.	TUFTS PER 1000 MET.
Tram, unbleached	22.9		197.5	85		
Colored in Switzerland	36.8	60.4	175.5	68	21.25	582
Colored in France	40.9	78.6	158	90	16.50	385
Colored in Italy	32.7	42.8	176	76	13.50	579
Colored in Germany	45.8	100	147	68	22.90	400

Those who attribute these tufts entirely to the quality of the silk, should examine this table. The variations are due entirely to the methods of handling the material, since the quality is exactly the same. They also indicate that, if the necessary precautions are taken in handling the material and the weighting is not carried to excess, that the number of tufts will be insignificant and cause no trouble in the goods. This statement has been confirmed recently by the results of coloring organzin light blue and black, shown in the following table:

	WEIGHTING PER 100	TUFTS PER 1000 M.
Organzin, white	20	521
Organzin, blue	20	99
Organzin, black	70	40

The report concludes by expressing the hope that in place of attributing this defect of frayed silk to the quality of the silk, that the practice of over weighting will be avoided and the dyer be given sufficient compensation for his work, to enable him to use necessary care in handling the material.

—A process of decorating velvet, which has recently been patented in France, consists of painting the design on the fabric before it is cut, using the same class of dyestuffs and thickeners that are used in cloth printing. These colors are then fixed by the methods used for printing cloth. The velvet pile is then cut. These designs are said to be very durable.

Tests for Weighting Materials on Silk.

BETA NAPHTHOL.

In the examination of silk fabrics to ascertain whether they have been subjected to the process of "weighting," there are a number of conditions that fall within the province of the practical analytical chemist; however, the following directions for testing silk for weighting materials are compiled for the use of the merchant, manufacturer and others who may not be expert chemists.

For weighting silk, four chief processes are available, each depending upon the particular color to be applied to the silk:

1. Iron weighting; always for blacks.
2. Tin weighting; white or fancy colors.
3. Lead weighting; same as for tin, also in conjunction with iron for blacks.
4. Tannin weighting; white or colors.

IRON WEIGHTING.

This process is of use for blacks only (where the greatest amount of weighting is practised), and especially in conjunction with logwood. Briefly, the process is to work the boiled-off silk alternately in a cold bath of nitrate of iron, and then in soap or soda crystals; this causes a deposit of oxide of iron to form on the fibre. Then the silk is worked in another bath containing yellow prussiate of potash and muriatic acid, after which it is washed and steeped in either cutch or gambir, when it is finally dyed with logwood.

If the immersions in the nitrate of iron bath are continued, say for 8 or 10 times, the weight may be increased fully 20 per cent.; that is, 20 per cent. above the normal amount of weighting required to restore the boiled-off silk to its original weight.

Test of Iron Weighted Silk. Hold a small portion of silk, yarn or cloth in a small blue flame of a Bunsen burner until it emits no smoke. If the form of the yarn or fabric remains distinct in the burned residue and is brown in color, it is positive proof that the silk was weighted with iron.

This burned residue (or ash) is dissolved in a few drops of strong muriatic acid, which is then diluted with about 10 drops of water, and a drop or two of a solution of yellow prussiate of potash added. If a blue coloration is noticed, additional proof of iron weighting will be had.

The ash of silk fibres that have been mordanted only, and without the object of adding weight, rarely have sufficient strength to hold together, while heavily weighted silks when burned retain perfectly the original form of the silk, whether as yarn or woven.

TIN WEIGHTING.

For very light, medium and bright colors upon silk, the dyer makes use of various solutions of tin, chief of which is stannic chloride, or tetrachloride of tin, and the process of applying it to silk is popularly known as "Dynamiting."

Silk, either wholly or partially freed from its natural gum, has the property of taking up from solutions of tin, considerable quantities of this metal, and without seriously impairing either the strength or lustre of the fibres. When so treated, and the oxide of tin properly fixed, the silk can be dyed with either the acid or basic colors, as if no preparatory treatment had been used. Such weighted silk is much used for both indoor decorations and trimmings.

Test for Tin Weighted Silk. If, upon burning a small piece of silk, the ash, or ignited residue, is white when cold, pour upon it a few drops of a solution of ammonic sulphide. If the ash turns brown, it indicates tin, due to the formation of tin sulphide.

LEAD WEIGHTING.

This process for increasing the weight of silk above the normal is employed by some dyers to a considerable extent. The silk is worked in

a bath of sugar of lead, and then in a dilute bath of sulphuric acid, repeating the operations a number of times. Occasionally samples of silk, especially black velvets, are met with that have been first weighted with lead, up to the proper point, and then mordanted simply to produce the depth of black desired.

Test for Lead Weighting. Add a drop of ammonic sulphide to the white ash of the silk and note whether it is changed to a brown-black. If it is, the weighting was done with lead.

TANNIN WEIGHTING.

Clearly allied to metallic weighting is that done with tannic acid in one form or another. Some dyers make use of sumac extract, others use pure tannin; the real object is not so much to add weight as it is to cause the silk fibres to swell up, thereby enabling a given weight of silk to go farther in a fabric.

Test for Tannin Weighting. The silk should be well boiled out for half an hour with water containing a small quantity of soda and then filtered; to the filtrate add a few drops of acetic acid, or sufficient to neutralize the acetate; then add from 1 to 5 drops of a clear solution of copperas (ferrous sulphate); let stand for half an hour and observe whether a black precipitate has formed. If one is noticed, the presence of tannin weighting is to be suspected.

It frequently happens that when a sample of black silk goods is burned two sets of threads are noticed which give unmistakable evidence of having been dyed according to two different processes. In most cases, one set is brown while the other is white, indicating at once the presence of iron on one and tin on the other. In such a case it is well to test the warp and weft threads separately.

To properly and systematically examine dyed silks, it will be found desirable to supply one's self with the following simple and cheap chemical apparatus:

One Bunsen burner and rubber tube connection; 1 small ignition stand with ring and wire triangle to support a crucible; 1 small porcelain crucible; a few "watch glasses" in which to test the ash of burned silk; a few small test tubes, and a pair of tweezers; concentrated muriatic acid (chemically pure); ammonic sulphide; carbonate of soda; yellow prussiate of potash, keeping the chemical supplies in glass stoppered bottles.

This list of articles need not cost more than $2.00, and will be found extremely useful. Instead of the "watch glasses," small plain white butter dishes can be used.

ESTIMATING THE AMOUNT OF WEIGHTING.

Many schemes have been devised for the purpose of ascertaining how much weighting has been given to a certain cut of silk, but none have been reliable, for the reason that tests for this purpose should be made upon the same silk before as well as after being weighted.

The nearest approach to fairly accurate results is to take a sample of the silk to be tested, weigh it accurately, and dry it until it ceases to lose weight. The loss indicates moisture, and should be noted. Now, ignite the dried silk in a weighed crucible until no organic matter remains; allow to cool and again weigh. The loss will include the fibroin of the silk and the organic constituents of the dyes, etc. The residue will be the mineral matter added, not only for mordanting, but for weighting, if the fabric was black, and if it was originally a white or colored silk, the fair presumption would be that the ash is the result of true weighting.

Until some definite understanding is reached as to how much weighting is allowable, it is feared that no method of assaying dyed silks will be accepted as standard. That some argument should be reached between the dyers and merchants, on this subject, goes without saying.

POWER DEPARTMENT.

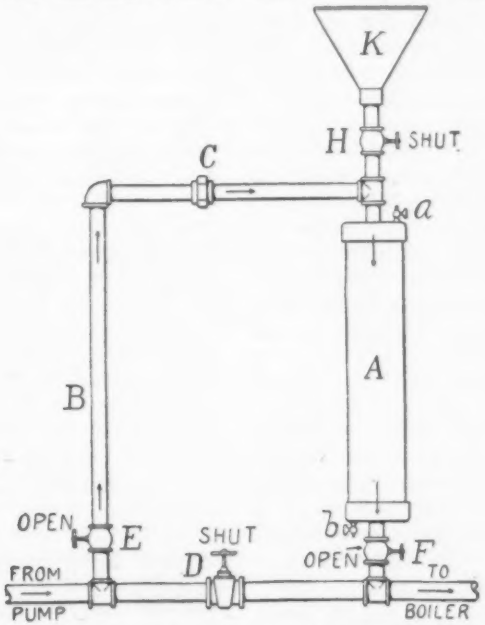
The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Introducing Solvents into Boilers.

We are often asked by engineers and others, how to introduce scale solvents, such as soda ash, into a boiler. We took up this question at some length, in the issues of The Locomotive for July and August, 1888, when we showed two very convenient arrangements for pumping the dissolved solvent into the boiler, and also a method of introducing it by means of an injector.

These different methods ordinarily work very well in practice, but we have occasionally had complaints to the effect that the soda ash, when passed through the pump, eats out the packing. We think this would hardly be likely to occur with a new packing, but with an old one, which had become impregnated with oil or grease, the soda ash might easily give some trouble as has been reported.

To assist those who have had difficulties of this sort, we present another plan for introducing the dissolved solvent, by means of which it is forced into the boiler without passing through the pump at all. The present arrangement calls for more piping than the ones previously shown, and its only advantage is, that it saves the pump.



Referring to the illustration, A is a section of big pipe,—say 6 inches in diameter and 30 inches long,—which is to serve as a reservoir. This connects with the feed pipe running from the pump to the boiler, by means of the pipes, B, C, and F, which are so arranged that they connect with the

feed pipe on opposite sides of the stop valve D. Over the reservoir is a funnel, K, by means of which the reservoir, A, can be filled through the valve H.

The reservoir, A, is provided with pet-cocks, a and b, at the top and bottom, so that it may be readily filled and emptied. A union is provided at C, to facilitate the assembling of the piping. (A right-and-left elbow, of course, may be used instead, if it is preferred.)

The device is used as follows: The reservoir, A, being empty, valves E and F, and pet-cock b, are first closed, and valve H and pet-cock a are opened. The soda ash solution is then poured into K until the reservoir, A, is filled. The valve, H, and the pet-cock, a, are then closed, as well as the valve, D, in the main pipe. Valves, E and F, are then opened and the pump is started. The device is then in the condition shown in the engraving, and the water from the pump passes around through B, C, and A, as shown by the arrows, sweeping the contents of A out into the boiler.

When the pump has been run long enough to thoroughly remove all soda ash from A, valve, D, may be opened, and valves, E and F, closed. The reservoir, A, is then emptied by opening pet-cock, b, and either pet-cock, a, or valve, H, and the device is again ready for operation.—The Locomotive.

Heating of Bearings.

This is a difficulty which increases with the speed of the shafting, and is caused by the increase of the friction in the bearings. It is very liable to arise when new machinery or shafting is first started.

To find the cause of this heating, the various conditions must be taken into consideration, and one having the care of bearings should have a knowledge of these conditions. Among them are the following: Improper setting up of the shafting or machinery, imperfect construction and sprung shafting.

Bearings that are out of line or tightened too much, and cap screws that are irregularly adjusted play an important part in causing the heating of the bearings. Sprung shafts are also liable to cause heating. Each shaft should be absolutely straight and round, and so placed in the bearing that it can be easily turned by hand without having the bearing too loose.

If the deflection of a bent shaft does not exceed 2 to 3 per running metre, it is not liable to cause trouble in heating the bearings. Sprung shafting can be recognized from the vibration of the caps on the boxes. Shafting may become bent by improper workmanship or setting up and also by cutting of the key ways, which may cause unequal stress of the inside and outside portions of the shaft.

The end thrust of the shafting is protected by so called collars.

As shafting expands and contracts with changes in temperature, collars should not be fastened at both ends of the shafting. They should be placed in the centre of the shaft, one on each side of a bearing, so that the expansion and contraction of the shafting can take place in either direction without obstruction.

In setting up shafting the cap on the first bearing should be loosely adjusted, then another bearing is tightened up and afterward each box is tightened; the workman should turn the shafting by hand to see that there is no binding. If the tightening of the cap causes the shafting to bind on the bearing, this can be remedied by placing paper under the cap.

Before the shafting is placed in the bearing, the latter should be well wiped off with cotton waste or a clean cloth, then oiled and the shafting put in place. It is essential that the oil be put on the bearing before the shafting is put in place because the weight of the shafting is often greater than the adhesive power of the oil, and if

the oil is not placed in the bearing before the shafting, the latter is liable to run dry and become scored.

Irregular adjustment of the bearings is indicated by the heating of one side of the bearing. In the case of crank shafting, the design and construction are important factors. Too weak a shaft springs and increases the pressure on the bearing.

It is a well known fact that the friction between different metals is much less than that between two surfaces of the same metal. Formerly tombac and cast iron were used for bearings, but now they are almost exclusively made of white metal.

For lubricating the shafting oil and greasy fats are employed. It is essential that they are free from acid. Heating of the bearings does not take place so readily when they are lubricated with oil as when grease is used. Nevertheless it is in many cases better to use grease.

Professor Thurston states, however, that a certain degree of heat in the bearings is favorable to the easier running of the shafting.

A ring oiler is the best method for applying oil to shafting. The first cost of this bearing is somewhat more, but this is more than offset by the economy in the use of oil, and by the fact that the bearing does not require so much attention. The addition of powdered graphite to the grease used for oiling gives good results. If the graphite is free from earthy constituents it results in considerable reduction of the friction.

If a bearing does not feel warm to the hand, it may be assumed that it is not too warm for economic running. In the case of a hot bearing the shafting need not necessarily be brought to a standstill, but in many cases the heat can be reduced by the liberal application of petroleum to the bearing, followed by oil.

Rubbing or grinding on the bearings can be detected by placing one end of a small rubber pipe to the box and listening at the other end; in this way a very slight grinding or scraping is discernible. Any unusual scraping indicates that grit or sand of some kind is in the bearing. It should be removed, otherwise both shaft and box will become scored.

We will add that when shafting is placed in position, it should be wiped perfectly clean before the oil is applied. Lubricating oil should be stored so that no dust or other foreign substances can get into it, otherwise they will work into the bearing and score the shafting.—Leipziger Drechsler.

Covering Steam Pipes.

The covering of steam pipes is an important factor in steam economy, and, in view of the high cost of converting water into steam, the pipe covering which most efficiently prevents the reconversion of steam into water is the cheapest.

If 650 square feet of pipe surface is so covered that but 3/10 lb. of water per square foot per hour is condensed, this condensation will in 300 work days of 10 hours amount to 585,000 lbs. of condensed water. If an inferior covering on the same surface allows a condensation of 4/10 lbs. water per square foot to take place, the water condensed in 300 days will amount to 780,000 lbs., showing a difference of 195,000 lbs. water, which at a sevenfold rate of evaporation would equal a coal consumption of nearly 14 tons.

Such a variation, says the Berlin Textil Zeitung, is by no means unusual in practice and shows that the difference in cost between good and poor pipe covering is very slight as compared with the saving effected by the former.

The condensation in uncovered steam pipes amounts to about 1½ lbs. per square foot per hour; this will, however, vary with the temperature of the air through which the pipes pass. The temperature of the surrounding atmosphere has much less influence on the rate of condensation

in the case of good covering materials than when a poor covering is used. No acid forming materials should be used in the covering, as they cause a corrosion of the pipe.

The use of superheated steam has made the covering of steam pipes still more important, since the condensation resulting from no covering or a poor cover of the pipes neutralizes the effect of superheating. For this reason, the covering on pipes carrying superheated steam should be from ¼ to ⅜ of an inch thicker than in the case of saturated steam. Especial care should be taken to cover the flanges well where superheated steam is used.

The covering material required per square meter for coatings of various thicknesses is as follows: coating ¾ inch thick, 28 lbs.; 1¼ inch, 46 lbs.; 1½ inch, 62 lbs.; 2 inch, 80 lbs.

The selection of a covering material should be made not upon the amount of water condensed, but upon the temperature of the outside surface of the cover, which should not be over 10° higher than that of the surrounding atmosphere of the room.

The Ziegelei Anzeiger gives an account of experiments recently made to determine the loss of heat from uncovered steam pipes. Four-inch pipe, with a surface of 322 feet, was used in the trial. The steam pressure was kept at 120 lbs. per square inch, and the surrounding air at a temperature of 68° F.

The loss of heat from this pipe during the experiment indicated a yearly loss of 174,000,000 calories, which would be equivalent to the consumption of nearly 48 tons of coal. This is considered a low estimate of the loss in practice.

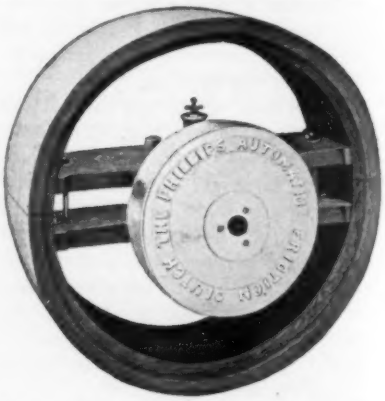
The still greater importance of covering steam pipes carrying superheated steam is shown by tests made at the same trial. It was found that with steam at a temperature of 480° F., the loss was double that with a steam pressure of 120 lbs. This would mean a yearly consumption of 96 tons of coal to supply the loss caused by the cooling of this amount of pipe.

The same journal cites the case of a German dyehouse equipped with three steam boilers which were insufficient to do the work. The owner refused on account of the expense to have the steam pipes covered, and added another boiler to the plant. Even this did not prove sufficient, and he then consented to have the pipes covered. The result was that the three old boilers could easily supply his dye works with steam.

The Phillips Friction Clutch.

Recently a representative of this journal, while on a visit to the Jamestown Cotton Mill of Jamestown, N. Y., inspected the Phillips Patent Automatic Friction Clutch.

He first saw the model in Mr. Smith's office, and after the mechanism was clearly explained, he was given an opportunity of inspecting the clutch in actual operation in the mill.



The machinery in one room, containing 8000 spindles, and part of the machines in another room, requiring 150 horse power, were driven by a 16-inch clutch, while the carding machinery was driven by an insignificant looking clutch of 14 inch diameter.

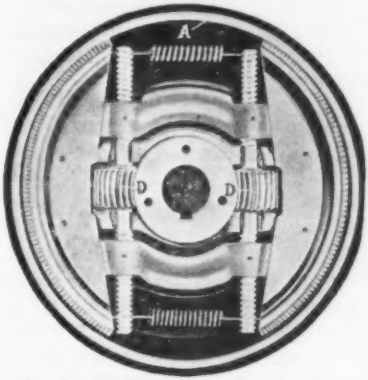
Our representative was favored by an exhibition of the operation of the spinning room clutch. The

spinning frames were first thrown off, then, by a pressure of one finger on the starting lever, the clutch was stopped. The same pressure in the opposite direction started the clutch, and put a 3½ inch shaft running 350 revs. a minute up to full speed in about 20 seconds without noise, tremor or jar. The most remarkable thing was the ease of the stopping and starting, the smoothness and celerity with which this is accomplished and the absence of all complicated mechanism.

After stopping and starting several times, the machinery was put on again and started up without the least slacking up by the clutch.

This room was formerly driven by a 24 inch toggle clutch, but not being equal to the load it was replaced by a 27 inch, and this was so heavily loaded that the engine had to be stopped several times to tighten up the frictions.

When the first Phillips clutch was put on two years ago, the size was



reduced from 27 inch to 18 inch, and since then the load has been increased. A year's work simplified and perfected the clutch, and the 18 inch was replaced by a 16 inch, which drives the load with perfect ease.

The simplicity of the clutch, and the large amount of power transmitted by it has been the cause of much astonishment to those who have seen the clutch in operation in Mr. Smith's mill at Jamestown.

Some of its good points are as follows: First the frictions are automatically adjusted in direct proportion to the load; any increase of the load produces an immediate relative increased pressure in the frictions; this self adjusting feature, and the simplicity of the means employed to produce it, constitute a triumph of mechanical ingenuity. By it, no greater strain is brought to bear on any part, at any time than is necessary to drive

the load, while all danger of slipping is done away with, because an increase in the load is immediately responded to by a tightening of the frictions.

This clutch combines an almost unlimited driving capacity, with a construction which is the acme of simplicity and neatness. Roughly speaking, a clutch of this make about five times the diameter of the shaft and the length of an ordinary coupling, will transmit the full power of the shaft, making the clutch about half the size of ordinary clutches, and even this size is not required by the frictional mechanism, but is simply a question of sufficent cast iron in the hub to drive the load.

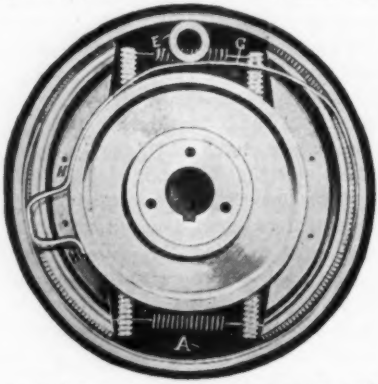
Every manufacturer and machinist is familiar with the large powers transmitted by frictions of small diameter in the case of ordinary clamp hub pulleys. A clamp hub pulley 48 inch diameter, and driving 75 horse power, can be fastened on a 2½ inch

shaft by four bolts of ⅝ inch diameter.

The mechanism of the Phillips clutch uses the power to tighten four bolts by means of a worm, gears and wedges. The frictions which cover two-thirds of the inside of the clutch is pressed so strongly against the inside of the shell as to make slipping practically impossible.

From the foregoing description, it will be readily seen that there are no levers or toggle joints exposed, which collect dirt and prove a source of danger to the operatives. The clutch has been designed so as to secure the necessary friction by a scientific combination of mechanical powers, thus avoiding the forcing of the frictions by brute strength.

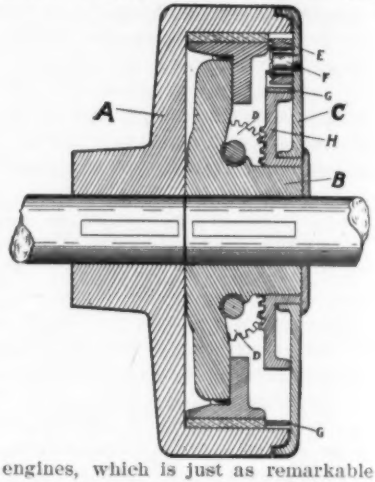
Among other good points, which may be mentioned, are the following: The clutch can be set so as to drive a certain load, and will slip, if the load is increased; this is a valuable feature in punches and presses which are liable to jam; there are no inside nuts and bolts to work loose; the strain comes on the wedges and frictions, and not on the gears. The gears can be moved by the fingers, when the load is all on; the shaft has



no end thrust; the shell is smooth and has no sliding parts or joints or collars to heat or throw oil, the driving and driven members being keyed fast on to their own shafts.

After a year's work, the friction shows no sign of wear. The operation of the clutch is more fully described in a circular and paper, which may be had on request from T. H. Smith, Cotton Mill, Jamestown, N. Y.

Before terminating what was a very interesting visit, the reporter was shown a model of a clutch for gas



engines, which is just as remarkable as the shafting clutch, one feature being its large capacity, allowing a 4 inch shaft to be used in a 12 inch clutch. This is a modification of the shafting clutch, and has all the good points of the latter.

—After extended examination of the action of traveler and spindle in ring spinning, Chas. Gegauff in L'Industrie Textile arrives at the following conclusion: Theoretically it is possible to wind the yarn on a spindle with a diameter equal to 1/26th that of the ring; the tension on the thread is, theoretically, equal to the centrifugal force of the traveler; practically, however, the threads break inexplicably on a diameter equal to 1/10 that of the ring, and the tension of the thread is 4/10th of the centrifugal force of the traveler.

—Patents have recently been granted to two different parties in this country, for methods of drying loose stock in a partial vacuum. The theoretical advantage of a vacuum dryer is so evident, that the development of these inventions will be watched with much interest.

DYEING DEPARTMENT

Dye Recipes for December.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

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Recipe No. 177.

Green on Cotton and Wool Mixed Goods.

Phenidine Green 5077 on 100 lbs. union goods.

Prepare the dye bath with

5 lbs. Phenidine Green 5077.
(Sykes & Street, 85 Water St., New York.)

20 lbs. Common Salt.

Dye at a boil for one-half hour, and finish the wool to shade by boiling and allowing the fabric to cool down in the bath in the usual way.

Phenidine Green 5077 is a very serviceable color for cotton and wool mixed goods.

Recipe No. 178.

Yellow on Silk.

Aurophosphine G on 100 lbs. silk.

Prepare the dye bath with

Boiled-off Liquor, if possible.

2 lbs. Aurophosphine G.
(Berlin Aniline Works, 72 Front St., New York.)
(It is well to add the dyestuff in several portions, rather than at one time.)

3 lbs. Olive Oil Soap

and enough Acetic Acid to make the bath distinctly acid.

Enter at 140° F., bring slowly to a boil, and dye at a boiling temperature for one hour, exhausting the dye bath if possible.

Aurophosphine G produces a brilliant and fast shade of yellow on silk.

Recipe No. 179.

Black on Worsted Yarn.

Buffalo Black 4B on 100 lbs. of worsted yarn.

Prepare the dye bath with

4 lbs. Buffalo Black 4B.
(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)

4 lbs. Sulphuric Acid.

15 lbs. Glauber's Salt.

Enter yarn at 140° F., bring slowly to a boil and dye at this temperature for one hour.

When dyed in this way Buffalo Black 4B produces a medium shade of black with a bloomy overcast and possessing good fastness to light, washing, etc., and can be recommended as being remarkably cheap.

Recipe No. 180.

Violet on Cotton Yarn.

Methylene Violet 3 R A on 100 lbs. cotton yarn.

First mordant the yarn with tannin as follows: Enter in a bath containing four to six pounds of tannin or an equivalent of light sumac extract, turn for twenty minutes at this temperature, and then sink for twelve hours. Lift, wring without washing, and work for twenty minutes in a cold bath containing

2 lbs. Antimony Salt.

Wash thoroughly and dye in a bath containing

1 lb. Methylene Violet 3 R A.
(Victor Koechl & Co., 122 Hudson St., New York.)

5 lbs. Acetic Acid.

Enter the yarn cold, work cold ½-hour, and bring to a boil during ¾ of an hour, and then dye at a boil ½-hour longer.

Methylene Violet 3 R A possesses good fastness to washing, light and soap.

Recipe No. 181.

Red on Worsted Yarn.

Acid Rubine B B on 100 lbs. of worsted yarn.

Prepare the dye bath with

3 lbs. Acid Rubine B B.

(C. Bischoff & Co., 87-89 Park Place, New York.)

4 lbs. Sulphuric Acid.

15 lbs. Glauber's Salt.

Enter yarn at 160° F., bring to a boil and dye at a boil for one hour, exhausting the dye bath if possible.

Acid Rubine B B produces a brilliant shade of bluish red, possessing good fastness.

Recipe No. 182.

Dark Blue on Worsted Yarn.

Acid Cyanine R on 100 lbs. of worsted yarn.

Prepare the dye bath with

6 lbs. Acid Cyanine R.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

10 lbs. Glauber's Salt.

2 lbs. Sulphuric Acid.

Enter the yarn at 100° to 120° F., bring to a boil and after boiling ½-hour add another

2 lbs. of Sulphuric Acid,

and continue the boiling for another half-hour.

Acid Cyanine R produces a full shade of blue and is very well adapted to the production of navy blues on piece goods.

Recipe No. 183.

Brilliant Red on Worsted Yarn.

Brilliant Sulphon Red B on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Brilliant Sulphon Red B.

(F. E. Atteaux & Co., 176 Purchase St., Boston.)

3 lbs. Sulphuric Acid.

15 lbs. Glauber's Salt.

Enter yarn at 170° F., bring to a boil and dye at a boil for one hour, exhausting the bath if possible.

Brilliant Sulphon Red B produces an exceptionally brilliant and even shade of red.

Recipe No. 184.

Blue on Worsted Yarn.

Blue 3 M on 100 lbs. of worsted yarn.

Prepare the dye bath with

2 lbs. Blue 3 M.

(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

4 lbs. Sulphuric Acid.

10 lbs. Glauber's Salt.

Enter yarn at 175° F., bring slowly to a boil and dye at this temperature for one hour. It is well to add the acid slowly, rather than all at one time, as tends to insure evenness.

When dyed in this way a full rich shade of blue is produced, which possesses good fastness.

Recipe No. 185.

Yellow on Cotton Yarn.

Sultan Yellow G on 100 lbs. of cotton yarn.

Prepare the dye bath with

2 lbs. Sultan Yellow G.

(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

20 lbs. Common Salt.

Enter the yarn at 170° F., bring to a boil and dye at this temperature for one hour.

Sultan Yellow G possesses all the characteristics of the direct cotton colors, goes on the fibre evenly, and has good fastness.

Recipe No. 186.

Brown on Worsted Yarn.

Pegu Brown G on 100 lbs. worsted yarn.

Prepare the dye bath with

4 lbs. Pegu Brown G.

(C. Bischoff & Co., 87-89 Park Place, New York.)

10 lbs. Glauber's Salt.

Enter at 170° F., and bring to a boil. After the boiling has continued ½-hour, exhaust by adding

5 lbs. Acetic Acid.

Pegu Brown G is exceptionally fast to light and washing, and in these re-

spects compares favorably with the Alizarines.

It may also be dyed on a chrome bottom, mordanted with Potassium Bi-Chromate, and Oxalic Acid or Tartar.

Recipe No. 187.

Scarlet on Cotton Yarn.

Diamine Brilliant Scarlet S on 100 lbs. cotton yarn.

Prepare the dye bath with

2½ lbs. Diamine Brilliant Scarlet S.

(Wm. J. Matheson & Co., Ltd., 182 Front St., New York.)

40 lbs. Glauber's Salt Crystals.

1 lb. Soda Ash.

Enter at 180° F., bring to a boil, and dye at a boiling temperature for one hour.

Diamine Brilliant Scarlet S produces a brilliant scarlet, which has good fastness to acids, and hot ironing, and is easily discharged with the crystals and zinc dust.

Recipe No. 188.

Dark Blue on Cotton Yarn.

Tetrazo Brilliant Blue 2 B on 100 lbs. cotton yarn.

Prepare the dye bath with

4 lbs. Tetrazo Brilliant Blue 2 B. (Dissolved in 2% Sal Soda.)

(New York & Boston Dyewood Co., 55 Beekman St., New York.)

30 lbs. Glauber's Salt.

Enter at 180° F., bring to a boil, and dye at this temperature for one hour.

Allow to cool in bath 15 to 20 minutes. In place of Glauber's Salt the same quantity of common salt may be substituted, and otherwise the recipe is the same.

Subsequent operations in the same bath require only about two-thirds the amount of dyestuff and about one-third the amount of assistants.

Tetrazo Brilliant Blue 2 B produces brilliant and even shades of blue, possessing, for a direct cotton color, good fastness.

Recipe No. 189.

Blue on Cotton Yarn.

Diphene Blue R on 100 lbs. of cotton yarn.

First mordant the yarn with tannin as follows:

Enter into a bath containing four to six lbs. of tannin or an equivalent amount of light Sumac Extract, and work at a temperature of about 140° F. for twenty minutes and then sink in the bath for about 12 hours.

Lift, wring without washing, and work for twenty minutes in a cold bath, containing

2 lbs. Antimony Salt.

Then wash thoroughly and dye in a bath containing

2 lbs. Diphene Blue R.

(Berlin Aniline Works, 72 Front St., New York.)

3 lbs. Acetic Acid.

Enter yarn cold, add the dye in several portions, heat to 120° F., work for about one-half hour, raise the temperature to a boil, turn off the steam, and work for a further half-hour. Wash and dry.

Diphene Blue R produces very heavy shades of blue with a low percentage of dyestuff, and possesses excellent fastness.

Recipe No. 190.

Green on Worsted Yarn.

Fast Green B on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Fast Green B.

(United Indigo and Chem. Co., 176 Federal St., Boston.)

3 lbs. Sulphuric Acid.

15 lbs. Glauber's Salt.

Enter yarn at 175° F., bring to a boil and dye at a boiling temperature for one hour.

Fast Green B produces a very brilliant shade of green, which will stand considerable fulling and is fairly fast to light, and dyes level shades.

Recipe No. 191.

Dark Blue on Worsted Yarn.

Acid Cyanine B on 100 lbs. worsted yarn.

Prepare the dye bath with

6 lbs. Acid Cyanine B.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

10 lbs. Glauber's Salt.

2 lbs. Sulphuric Acid.

Enter the yarn at 100 to 120° F., bring to a boil, and after boiling ½-hour add another

2 lbs. Sulphuric Acid,

and continue the boiling for another half-hour.

Acid Cyanine B produces a full shade of blue, and is very well adapted to the production of navy blues on piece goods.

Recipe No. 192.

Yellow on Cotton Yarn.

Diamine Fast Yellow F F on 100 lbs. of cotton yarn.

Prepare the dye bath with

2 lbs. Diamine Fast Yellow F F.

(Wm. J. Matheson & Co., Ltd., 182 Front St., New York.)

25 lbs. Common Salt.

Enter the yarn at 175° F., bring to a boil and dye at this temperature for one hour.

Diamine Fast Yellow F F has a very high coloring power and produces brilliant shades of golden yellow.

Shaded Woolen and Worsted Piece Dyed Goods.

(Continued from November).

Hard water in scouring should not be overlooked. The water supplied to mills frequently gives every indication of being excellent, but upon examination, they will frequently be found charged with lime or magnesia, two substances that are the cause of much trouble to the scourer, on account of forming insoluble lime or magnesia soaps when brought in contact with the ordinary soaps of the textile mill.

Another cause of shaded pieces is due to a common practice of allowing the goods, still soaked with the mordanting liquor, to stand for some time before washing. As can be imagined, the excess chrome liquors run to the bottom, and being warm, continue to be taken up by the woolen fibres in the lower folds, causing the deposition of a greater amount of mordant at that end of the piece than at the upper folds. The remedy for this is to wash the mordanted pieces as quickly as possible, and not allow any goods to lie around.

Many classes of goods are scoured or otherwise prepared for dyeing by being run through rope machines, and even when the pot-eyes are of the largest size, streaks will almost invariably occur, unless the fabrics are carefully spread out during the operation. The reason for this is obvious, in the endless form of the pieces, creases and folds occur, and by continually passing through the same channels, become fixed, and wherever the crease is, there will be the shaded spot or streak.

In an entirely different form, and yet due from nearly similar causes, is the case where the edges of pieces are of a darker shade than the centre. This dark shade may extend towards the centre for several inches, and is traceable to the roller covering being of less width than the goods that are being squeezed, causing little or no pressure at the selvages, which thus allows this part of the fabrics to become over-mordanted or over-dyed. In cases where roller machines are employed, the lapping should be of such length as to extend an inch or two beyond the widest piece the machine can take. When rollers are used, as in piece dyeing jiggers, care should always be exercised to guard against creases or folds as the fabric laps around, these creases are usually diagonal in direction, and show very plainly in the finished goods, not as a crease, but as a lighter colored streak than the remainder of the piece. The only remedy for this is to prevent uneven winding.

Much uneven dyeing can be attributed to incomplete solution of the colors used, whereby undissolved particles become momentarily fixed upon

the goods, and then gradually dissolve as the fabric is worked in the dyebath, and as it dissolves, a gradually widening streak is seen to develop.

Sometimes, instead of one or more such streaks, innumerable spots of various sizes appear, from a mere speck up to a quarter of an inch in diameter, and frequently of two or more colors, especially if the dyestuff used is a mixture.

Such troubles can be overcome by previously dissolving the dyestuff in a pail of hot water, and straining through a finely woven cotton cloth, and washing any residue on the strainer with an additional pailful of hot water. Many dyers are in the habit of adding the dyestuff directly to the dyebath, and giving a pretty good raking, but this is not the best practice to follow, as all dyestuffs do not dissolve alike; some require actually boiling water, while others are more soluble, and will easily dissolve in ordinary warm water without difficulty, and as boiling water is in no way injurious to any dyestuff it is best to make an invariable rule to use it.

Where the dyer makes his own combinations, he should assure himself that the dyestuffs used for any particular shade do not precipitate each other, as in this case the precipitated color is not readily taken up by the goods, but, as the dyeing progresses, it becomes fixed on the fibres and as a rule, not very evenly. This condition has been occasionally met with when certain combinations for greens on woolen goods have been attempted with Naphthol Yellow and the soluble Blues.

When dyeing mordanted woolen goods with the natural dyes such as logwood, fustic, etc., it is always advisable to get them into the washers as quickly as possible after being dyed, and not allow them to remain soaked in their own dye liquor, as the bottom layers or folds will surely be heavier and fuller in shade than the upper folds. This is frequently the cause of pieces being lighter in shade at one end than at the other, and yet the dyer when called upon to explain the reason, has none to offer, contenting himself that the goods were dyed properly and "the same as always."

Another prolific cause of trouble is entering the goods to be dyed in a too highly heated dyebath, especially when using the acid colors. In all cases dyeing of woolens should commence at as low a temperature as is consistent with economical work. In most instances it will be found safe to enter the goods at or near 140° F., and then to manipulate them for a sufficient time to be certain that they are saturated with the dye liquor, before raising the temperature to the boil, which can be done gradually while the goods are run over the winch. Owing to the very strong affinity that many so-called acid colors have for wool, commencing to lye at a low temperature is the only proper way.

As a general rule, the dyer who looks after his own scouring has less to fear from uneven dyeing than one who does not, but in no case should anything be taken for granted, and the smallest detail in piece goods manufacture should not be too insignificant to receive attention.

—Within the past two or three years machines of the Bonaz system have been very largely adopted by dyers, finishers and manufacturers for the purpose of marking or numbering pieces so that they can be easily identified at each stage of the process of dyeing and finishing. When the piece is finished, the marks can be ripped out by taking hold of one end of the thread. There are many different styles of the Bonaz system of machinery, and in the past few years great improvements have been made, especially for the embroidering of hosiery.

—Each one to his way of looking. As for me, I look with my eyes.—Commerson.

Cotton Colors Fast to Milling and Washing.

From a Lecture by Richard Loewenthal, Ph. D.

During the past few years, the sulphur dyes have acquired an immense importance and are consumed in enormous quantities, and these large quantities of dyestuffs are produced without anybody knowing their composition. So far, it seems, no certain results as to the constitution of these colors have been obtained. From the colorist's point of view, I do not expect very much at present from an exact knowledge of the chemical constitution. The chief point seems to me to be the finding out of the best ways and means for dyeing each product, and especially the most suitable methods of after-treatment. The Immedial colors form a special group of these dyes, i. e., Immedial Black, Blue, Brown and Bronze. With these coloring matters, a fair variety of extraordinarily fast shades can be dyed in a simpler way than was known before for the production of fast shades. The great favor that the Immedial colors have found is due, apart from their extreme fastness and their fine shades, to the fact that nobody has had ill success with them who worked in the right manner.

Although the method of dyeing differs in some points from the common way of working, it is not at all complicated, no costly appliances nor any difficult operations being required. The colors are dyed in a hot alkaline bath, with the addition of soda, salt, and sulphide of soda, the latter being essential to work the color on to the fibre. Since the colors behave similarly to vat-indigo in being permanently fixed on the fibre by the oxidizing action of the air, the goods should be kept under the surface of the liquor during the dyeing, so as to be protected against the air, and when coming out of the bath, they should be freed rapidly from any surplus of the liquor to ensure evenness.

For these purposes in yarn dyeing, the ordinary yarn-sticks are replaced by bent iron pipes, which cause little expense and will last an unlimited time, and a very simple squeezing arrangement, consisting of two wooden rollers to be pressed together in a slit of hoop-iron, is used for squeezing off the surplus liquor. There is still one special feature to mention, viz., that neither brass nor copper must be in the dye-vat.

Immedial Black FF Extra is the principal brand for deep blacks and yields shades similar to aniline oxidation black. It is equal to the same in fastness to light, washing, milling, acids, and alkalies, and superior in so far as it does not turn green, and does not tender the fibre if dyed in the right way. Immedial Black V Extra yields a bluer black, and Immedial Black G Extra gives a greenish black.

The fastness of the direct Immedial blacks is almost absolute, and, although an after-treatment with metallic salts is usual, it can hardly be said to be required for improving the fastness, though the after-treatment will enhance the bloom of the shades.

The after-treatment for bluish-black is carried out with a little bichrome; for greenish blacks, with chrome alum, and for the usual shades of blacks, with a mixture of bichrome and chrome alum. The two brands—Immedial Black NG and NB, dye very fair blacks, equal to those of the Extra brands in fastness, but inferior in shade. They possess, on the whole, the same tinctorial character as the Extra brands, but, as a rule, after-treatment is not applied to them, no material improvement being obtained thereby.

A near relative of the blacks is Immedial Blue C, which is dyed exactly like the blacks, and then developed either by peroxide of hydrogen or by the combined action of air, heat, moisture, and alkali. The latter method is now generally used in preference to the more expensive one with peroxide of hydrogen, which was proposed at

first. For the production of the blue shade, cotton is dyed as with Immedial Black, with the only difference that a little caustic soda lye is added to the bath.

The material, when coming out of the bath, is wrung, but not rinsed, as the presence of caustic alkali is very important for the development of the blue. The cotton is then brought into a steam-box of any construction whatever, which need only be supplied with an air injector to introduce the necessary air; or yarn may be hung up in an ordinary empty dye-vat, covered with blankets and steamed by slowly opening the valve of the steam pipe. It is even sufficient to wrap the dyed cotton in oil paper, so as to prevent drying, and place it in a heated drying room; enough steam will be produced in the material to develop the blue.

Immedial Blue is equal to indigo in fastness to light, acids, and alkalies and superior in fastness to washing, and as its shade comes very near to that of indigo and the color does not rub off as indigo does, it has replaced the latter in many cases and in many dye houses. Of special importance is Immedial Blue in combination with vat indigo, since by topping with indigo in the vat, the true indigo shade is obtained. In this case, no special developing of the Immedial Blue is required, the cotton after dyeing being simply rinsed in water, and subsequently dyed in the indigo vat, when the blue will be developed by the action of the vat.

As Immedial Blue is much cheaper than indigo, the application of indigo natural or artificial, is thus rendered possible in many cases where indigo, on account of its high cost, would be prohibited, if it were not done on a bottom of Immedial Blue. Immedial Blue can also be brightened by topping with the basic colors, for which it serves as an excellent mordant. New Methylene Blue, Indazine, and Naphtindone especially are well suited for topping Immedial Blue, without in the least affecting the fastness of the color.

Immedial Brown and Immedial Bronze are useful for dyeing browns and mode shades, in combination with Immedial Black and Immedial Blue, and also with Diamine Fast Yellow B and Diamine Orange B, in the latter case fixed with blue vitriol and bichrome.

The Immedial colors are suitable for all kinds of cotton materials, yarns, piece-goods, and loose cotton. They are distinguished by their remarkable fastness to almost all influences and the very simple methods of fixation, and, therefore, have readily found introduction into many dye houses, and their use is steadily increasing everywhere. So far, the range of shades obtainable with them is limited, but it will doubtless be enlarged within a short time, so that they may conquer new fields now occupied by coloring matters of minor fastness.

Printing Half Woolen Goods.

In a recent issue of the "Bulletin de la Soc. und de Mulhouse," a method of printing half wool goods is described, which is said to have been used with great success in a printing establishment at Elberfeld.

The goods are first singed in the usual manner and then rinsed for one-half hour in water at 114°. The goods are next soaped; two (2) lbs. of soap and 154 grams of soda are used for each piece of 120 yards. The soap bath is heated to 105° or 120° C. and the goods immersed for 1¼ hours, after which they are well washed in a bath containing 150 grams of soda per piece.

The goods are now ready for the bleaching bath, which is composed of 20 gallons of water, 3 lbs. of silicate of soda (40° B.), 6 gallons of peroxide of hydrogen. This bath is heated to the boiling point and the goods immersed from three to four hours. Care must be taken that the goods are not exposed to the air during this

treatment and that they be frequently stirred while in the bath. The duration of treatment depends upon the quality of the cotton in the goods. Good American requires about two hours, while Egyptian cotton needs four hours. When the color shows that the goods have been sufficiently bleached, they are removed from the bath, pressed, washed and dried.

Next follows the chlorinating of the wool. This process is carried on in two tubs, one containing 70 gallons of water and 10 gallons of 6° B. muriatic acid. The other tub contains 70 gallons of water and 13 gallons of a 6° B. of chloride of lime. The goods are now passed through this acid bath and then through the lime bath, after which they are well washed. The pieces are next treated for one hour in a 3° B. stannate of soda bath. They are then treated in a 2° B. sulphuric acid solution, then well washed and dried.

The goods are next printed by the steam or naphthol style. The printing and subsequent washing and soaping is done in the usual manner.

Double Shades on Silk.

A process for dyeing silk, invented in France, has recently been patented in this country.

As stated by the inventor, the object of the invention is to obtain double shades on silk cloths, whether pure or union.

This process consists in first preparing the silk that is to be used either as warp or as woof of the cloth by the operations of scouring, galling, clearing, passing through bichlorid of tin, fixing, and washing; second, in weaving a cloth with the warp or woof thus prepared and a warp or woof of raw silk that has not been prepared; third, in passing the cloth thus obtained through several baths of successive dyes, the dyestuffs of which, duly chosen, will fix on one of the parts (either the warp or the woof) and not on the other; the preparation to which one of these parts has been submitted acts as a mordant with some dyestuffs and as a reserve with others.

One can choose for one of the baths a dyestuff which will fix on the prepared part and not on the raw one and for the other bath a dyestuff which will fix on the raw part without affecting the prepared part in a perceptible manner.

For example, the cloth having been made from a woof prepared as above stated and an unprepared raw silk warp, then scoured and put into a bath of methylene blue, it will become blue; a simple clearing will suffice to take the blue color out of the warp, whereas the woof will remain blue. After that the warp can be dyed pink in a second bath of rhodamine without changing the blue shade of the prepared woof in a perceptible manner.

This example is sufficient to show the way of going to work in every possible case. This process can be combined with those already in use to obtain double shades on cloths made of silk and cotton or of silk, wool, and cotton, so as to give, if necessary, three, and even four, different shades to the same cloth.

--A method has been recently proposed in Germany for preventing the greening of aniline black. A percentage of meta-nitranalin is added to the analine dye bath, which is made up as follows: Six per cent. analine oil; 6 per cent. meta-nitranalin; 16 per cent. muriatic acid; 2½ per cent. sal ammoniac; 6 per cent. chloride of soda; 2 per cent. nitrate of copper.

After drying the impregnated yarn is oxidized and then treated in a 5 per cent. bi-chromate of potash bath at 52 degrees C. It is left in this bath for 24 hours, and then washed and dried.

—The heart of man is a lyre with seven strings, six for grief and one for joy; the latter vibrates seldom.—Abbe Bony.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Dotham. D. C. Carmichael, S. B. Bennett and S. C. Oliver are interested in the company which will have a capital stock of $200,000, divided into shares of $100 each, to build a cotton mill at this place. They propose having the mill equipped with 10,000 spindles and 300 looms.

—*Alabama, Huntsville. The machinery is being placed in position in the Madison Spinning Mill and the Rowe Mill and it is expected to soon begin operations.

—Alabama, Huntsville. It is reported that W. I. Wellman and T. A. Pratt, with other associates, are negotiating for another large cotton mill at this place. It is thought that a free site and free water will probably be offered.

—*Georgia, Conyers. The Milstead Manufacturing Co. has been incorporated with capital stock of $150,000, with privilege of increasing to $500,000. They propose manufacturing cotton goods, gin cotton, etc.

—*Georgia, Fitzgerald. The machinery has been shipped for the Irwin Cotton Mills, which are expected to be in operation by the middle of next January. W. Bowen is secretary and treasurer of the concern.

—*Georgia, Gainesville. The Gainesville Cotton Mills expect to start operations early this month, with 25,000 spindles, as has been previously reported. The buildings have been completed and the machinery, with exception of boilers, about all received.

—*Georgia, Hawkinsville. The machinery, with exception of the new looms, not yet received, is being set up in the new mill of the Hawkinsville Cotton Mills. Operations will be started with 3000 ring spindles.

—*Kansas, Independence. Geo. F. Guernsey, J. A. Stone and I. B. Wallace have leased the mill from the Kansas Cotton Mill Co., and will operate same under name of the Kansas Twine Co. J. A. Stone is president; Geo. F. Guernsey, treasurer, I. B. Wallace, agent and W. F. Dennis, superintendent and buyer. They will make cotton wrapping twine, and sell same direct. Mill has 2064 spindles.

—*Louisiana, Shreveport. The Hargrove Cotton Mill will not be put in operation until next season. The machinery has not yet been installed. L. C. Allen is president of the mill.

—*Massachusetts, Monson. F. A. Langwald is installing 12 looms in the plant which he contemplates having in operation January 1st, 1902, weaving and finishing worsteds.

—*Massachusetts, New Bedford. George S. Homer is to be treasurer and John Sullivan of Fall River, superintendent of the new mill to be established here with capital of $500,000, of which $350,000 has been subscribed by Fall River capitalists. This is to be a fine goods mill.

—*Massachusetts, Auburn. Sidney Segal has been appointed treasurer of the Pondville Woolen Cmpany, which will soon be running in full, and will be located in New York, where a selling office will be established. M. G. Rosenburg will be sole manager of the mill, with Fred A. Lapham, as superintendent.

—*North Carolina, Belmont. The Chronicle Mills have completed construction of their buildings and are now setting up the machinery.

—Pennsylvania, Milton. Operations have been started in Thomas Henry Jr.'s new hosiery yarn plant.

—Rhode Island, Providence. The Wadsworth Braiding Co. is the name of a new concern, manufacturing glazed yarns and shoe lacings, located at 456 Potter Ave.

—Rhode Island, Providence. Articles of incorporation have been filed by Vincent Bowen, Edgar L. Bowen (Providence) and Earl A. Potter (Cranston) to manufacture lacing and braided goods. The capital stock is placed at $20,000.

—Rhode Island, Valley Falls. Work has been started on construction of the new mill of the Naushon Company.

—*Rhode Island, Woonsocket. Albert Fowden has purchased J. F. Dustin's interest in the Woonsocket Corduroy Company's plant, and will continue operating under same name. He will install 14 more looms in the plant, making a total of 30 for making corduroys. Plant is operated by steam and water and is located in the Main St. Power Co.'s building.

—*South Carolina, Greenwood. The Miriam Textile Manufacturing Company has been incorporated with capital stock of $15,000, by Thomas B. Lee, D. A. P. Jordan, W. L. Durst and S. H. McGhee, for purpose of manufacturing cotton products. This probably has some reference to the cotton wadding mill proposed by Thomas B. Lee.

—*South Carolina, Hartsville. The Hartsville Cotton Mills, for which all the machinery has been purchased, and of which C. C. Twitty is president, propose being ready to start operations about March 1st.

—*South Carolina, Laurens. L. A. McCord has abandoned the idea of starting a new yarn mill at the present time.

—*South Carolina, Lolo. A large part of the machinery for the Valley Falls Manufacturing Company's new mill has been received and is being set up. The concern will manufacture a high grade of print cloths and expects to begin running in about 60 days. S. W. Scruggs is president and treasurer of the plant.

—*South Carolina, Union. The roof has been put on the new Aetna Mill, and it is expected that machinery will be installed next month. Work is under way on erection of two score new cottages for the operatives.

—*South Carolina, Woodruff. The Woodruff Cotton Mills are placing machinery in the buildings and contemplate being ready for production of goods about the 1st of January.

—Tennessee, Memphis. F. L. Martin contemplates the establishment of a batting mill at this place. He is now inviting correspondence regarding machinery for making light bats for comforts and pillow linings.

—*Texas, Houston. A. F. Parker advises us that he is contemplating organizing a company to build and operate a plant for manufacturing camels hair press cloth, as per previous report.

—*Texas, Cuero. The buildings for the Cuero Cotton Mills have been about completed and contracts are to be let shortly for machinery equipment, bids for which will be opened November 15th, on 5000 spindles and 160 looms. Specifications can be secured from P. H. Caldwell, secretary.

Enlargements and Improvements.

—Connecticut, Moodus. The old stone mill, recently occupied by the Monitor Incubator Works, has been purchased by the Williams Duck Company, who will equip same with machinery, etc., for manufacturing duck.

—Delaware, Wilmington. The Reliance Mills Company, which started operations about last April, with 20 looms, making fine cotton and woolen goods for men's and ladies' wear, is putting in 12 more additional looms. H. J. Ahrens, formerly with the Arlington Mills, Lawrence, Mass., is superintendent of the plant.

—*Georgia, Cedartown. The Standard Cotton Mills have completed construction of new addition and are now installing the machinery. The Howard & Bullough American Machine Co. is furnishing the picking, cards, drawing and speeders, and C. E. Riley & Co., the mules.

—Georgia, Chattahoochee. The Whittier Mills, whose selling office is in Springfield, Mass., have recently completed important additions to their plant, giving them present facilities for coloring 25,000 lbs. of yarn daily, and also facilities for glazing yarn.

—*Georgia, Columbus. The Swift and Hamburg Cotton Mills are to be operated by electricity and arrangements for changing the power are now being made.

—Georgia, Lindale. The Massachusetts Mills in Georgia have recently installed 50 more looms in the plant.

—Illinois, Aurora. The Aurora Cotton Mill Co. is increasing the capacity of the bleachery, which will permit them to double their present production. This plant handles considerable outside work.

—*Maine, Westbrook. Work will be pushed to completion on erection of the new dye house for the Dana Warp Mills, delayed on account of not having the necessary lumber.

—Massachusetts, Fall River. Two additions, 20 by 58, and 22 by 24 feet, 3 stories, are to be built to the picker house of J. H. Estes & Son.

—Massachusetts, Fall River. Contract has been let by the King Phillip Mills, for the erection of a new cloth room, near Mill No. 1, 107 by 70 feet, 2 stories high.

—*Massachusetts, Fall River. It was voted at a recent meeting held by the stockholders of the Stevens Manufacturing Company, to increase the capital stock from $350,000 to $700,000. The increase is to be used for enlarging the plant, upon which a report has been previously made.

—Massachusetts, Lowell. The Boott Cotton Mills are starting up two new weaving rooms.

—Massachusetts, Turner's Falls. The Turner's Falls Cotton Mills are making improvements to the mill and also are adding some new machinery.

—*New Hampshire, Hooksett. New machinery is being installed in the Dundee Mills.

—*North Carolina, Charlotte. The Orient Mills are now installing the additional 7000 spindles and 160 looms previously reported to be made in the mill, in the new addition, 100 x 208 ft., which has been erected for that purpose. When this is completed it is reported that they will purchase another 7000 spindles and same number of looms. It is expected to have the mill in full operation by January 1st.

—North Carolina, Fayettville. The Holt-Morgan Cotton Mills will start work at once on erection of an addition for the plant.

—North Carolina, Graham. Additional machinery from the Howard & Bullough American Machine Co. is being installed in the Oneida Cotton Mills.

—North Carolina, Kinston. A special meeting was held recently by the stockholders of the Kinston Cotton Mills, at which the directors were authorized to issue $20,000 of cumalative preferred stock, December 2d.

—*North Carolina, Lexington. The Nokomis Cotton Mills have installed 100 new looms in the plant, giving them a total number of 350 now in the mill.

—*North Carolina, Sanford. The Sanford Cotton Mills will install 50 more looms in the plant.

—North Carolina, Smithfield. The Smithfield Cotton Mill has been granted authority to issue $75,000 worth of preferred stock.

—*North Carolina, Statesville. The new mill for the Statesville Cotton Mills will be started up in a short time, the machinery having been installed.

—*Rhode Island, Lonsdale. Parts of the new addition to the Ann & Hope Mill are occupied, and portions of the slashing, weaving and spinning depart-

ments are in operation. It is expected that the entire building will be ready in about six weeks.

—Rhode Island, Pawtucket. Contract has been let by the Smith Webbing Company for the erection of an additional story to the mill, 220 x 50 feet, brick.

—Rhode Island, Pawtucket. Plans are reported to have been made for the erection of a large sized addition to the cotton mill of the Lorraine Mfg. Co. The enlargement is for increasing the yarn output.

—*South Carolina, Anderson. Machinery is now being placed in position in the new addition, 120 ft. x 76 ft., two stories high, recently completed by the Cox Manufacturing Co. It is reported that the company contemplates erecting an entirely new plant next year.

—*South Carolina, Cowpens. The Mary Louise Mill, recently reported to increase the capital stock to $50,000, contemplates erecting a duplicate plant, or enlarging the present one, which contains 1040 spindles.

—South Carolina, Greer Depot. The Victor Mfg. Co. expects to have the new machine shop which they are building completed within a short time. They have recently completed construction of a number of new houses for the operatives.

—South Carolina, Inman. The capital stock of the Inman Cotton Mills is to be increased from $200,000 to $500,000. A meeting will be called on Dec. 4th to decide upon same.

—South Carolina, Rock Hill. The Manchester Cotton Mill Company, which has considerable unoccupied space in the mill, contemplates installing 6000 more spindles and 240 looms. A definite decision will shortly be made regarding the increase. The mill now has 18,240 spinning and 3840 twister spindles and 300 looms.

—South Carolina, Westminster. The Cheswell Cotton Mill Co., whose mill when first built had accommodations for 11,000 spindles, will add 6000 spindles and 250 looms in the spring, utilizing the vacant floor space.

Mills Starting Up.

—*Georgia, Lavonia. Operations have been started up in the Lavonia Cotton Mills, of which M. Crawford is president, and Mr. Lewis superintendent.

—*Maine, Richmond. The Kennebec Spinning Mills Co. has been incorporated by a syndicate of Boston capitalists to operate the Richmond Cotton Mills. Arnold B. Sanford of Boston will be president and general manager of the new company. Several improvements will be made and high grade combed Egyptian and Sea Island yarns manufactured.

—Massachusetts, Franklin. The Worcester Textile Works, which have been shut down for about three weeks, have resumed operations.

—*Mississippi, Moorhead. Operations were started this month in the Moorhead Cotton Mills, of which M. E. Leary is superintendent. This mill is equipped with 5000 spindles and 144 looms.

—*North Carolina, Charlotte. Operations have been resumed in the Ida Mfg. Co.'s mill after several months' shutdown. New cards and drawing frames are being installed.

—*North Carolina, Concord. The Lippard Yarn Mill, of which J. C. Lippard is president; J. B. Sherrill, treasurer, and J. C. Odell, superintendent, has resumed operations, making 14/2 skeins, with 1920 spindles.

—*South Carolina, Yorkville. The Tavora Mills, formerly known as the Sutro Cotton Mills, have resumed operations after several months' shut down.

Mills Shutting Down.

—Connecticut, Meriden. The mill operated by the Independent Thread Company has been closed. It is not known when operations will be resumed as the company's finances are reported to be involved.

—*Rhode Island, Hope Valley. The Nichols & Langworthy Machine Co., advise us that repairs are being made to the water wheel and waterway, but that nothing definite has yet been decided upon regarding the starting up of the plant.

Woolen.

New Mills.

—Connecticut, East Killingly. Burnett C. Young has purchased the Albion Mills, formerly leased by G. D. Handy, and operated on cotton yarns, and will equip same with machinery for making shoddy.

—*Kansas, Topeka. The entire plant of the Western Woolen Mills, which have been started up on small scale, is expected to be running in about three weeks.

—*Massachusetts, Indian Orchard. The Rhode Island Worsted Co., capitalized at $40,000, with James D. Reilly, president; Daniel N. Brown, treasurer and agent, and Walter Nieber, superintendent, will start production of goods about Jan. 1st, 1902, in their new mill. They will make men's fancy worsteds, operating 42 Knowles looms. Mill will be equipped with a dye house. Goods to be sold by H. W. T. Mali & Co. Have not yet arranged for some of the dye house equipment.

—Massachusetts, Newton. The upper mill of the Nonantum Mill is being operated as the Saxony Worsted Mills, with Samuel Hyslop as treasurer and agent. They are making fine worsted yarns by the French system, 20's to 70's, operating 3600 spindles, with steam power. They will add 7360 more spindles to the plant.

—Massachusetts, Webster. Henry Merritt has leased the mill formerly occupied by Lemuel D. Perry and is making preparations to put same in operation at an early date. About 18 looms will be installed for making fancy worsteds and

furnishing employment for about 50 people. Mr. Merritt was formerly designer for the Chase Mills.

—Michigan, Howard City. An addition is being built to A. W. Messenger's feed mill, in which he will install machinery for a woolen mill, replacing the plant destroyed by fire in '99. He contemplates having the machinery in operation by next March.

—Ontario, Galt. The Royal Carpet Company will have a new factory erected here which they have the privilege of purchasing at end of 10 years.

—*Oregon, Eugene. Arrangements are being made by Wagnon & Hirst, recently given a bonus of $8000, to establish a woolen mill here, for starting work of construction at once.

—*Pennsylvania, Philadelphia. Curt A. Loewel is president; Mayer L. Kahn, treasurer; Samuel K. Louchkeim, secretary; Oscar Hoffstadt, manager, and William Deacon, superintendent of the Roosevelt Worsted Mills, which are located in plant formerly run by Albert R. Elsasser, 21st and Naudain Streets. Twelve spinning frames and auxiliary machinery have been added. Most of the yarns will be made for the Fern Rock Woolen Mills, but those to the trade will be sold through Boessneck, Broesel & Co.

—*Rhode Island, Oakland. The Coronet Worsted Company has completed the erection of their new mill. They have completed installation of 50 of the machines and expect to have the plant operating in full December 1st.

—Rhode Island, Providence. The Regal Worsted Mill Company, which has recently started operations in plant formerly occupeid by the Galvin Yarn Company, will start running the machinery nights.

—*Rhode Island, Woonsocket. The machinery is being set up in the new mill recently completed for the Dunn Worsted Mills. It is expected that work will start before December, making worsteds.

—*Rhode Island, Woonsocket. The Model Spinning Co., which has but recently been put in operation, manufactures woolen and merino yarns, fine to heavy numbers. The plant has 2 sets cards, and uses the Belgian system. Product is sold direct. Company also spins on commission.

—*Texas, Del Rio. Keller & Van Dunker will start operations in about 60 days in their new plant, manufacturing blankets. The mill will be started on a small scale, with one set of cards, three looms, picker, duster, twister and spooler. They will make a specialty of making saddle blankets for the western trade, 33 x 60 inches, weighing from four to six pounds.

Enlargements and Improvements.

—*Connecticut, Mystic. The Mystic Manufacturing Company has recently added two new looms to the equipment.

—Delaware, New Castle. The Knowles Woolen Mills are erecting an addition to the mill, in which they will install a rag picking machine.

—Maryland, Dickeyville. A new power house, 46 by 52 feet, brick and stone, two stories, is to be built by the Ashland Manufacturing Co. They are now letting the contracts. The company has recently completed the erection of a new weaving shed, 70 by 210 feet, 2 stories, and required additional power.

—*Maine, Oxford. Work is progressing upon erection of the new dye house for the Robinson Manufacturing Co., whose plant is running with a night and day force.

—Maine, South Windham. The Robinson Mills have just completed the erection of a new boiler house, 30 x 50 feet, brick, in which a new boiler (150 h. p.) has been installed. They have also made additions to the machinery equipment of the plant.

—Massachusetts, Globe Village. The Hamilton Woolen Company is arranging for installation of 75 new Jacquard looms in the weaving department of the mill.

—*Massachusetts, Haverhill. Work has been started on construction of the new addition, 37 by 40 feet, for Stevens & Co.

—Massachusetts, Lowell. The Bigelow Carpet Company is adding 6 additional sets of 48-inch carding and spinning machinery.

—Massachusetts, Millbury. The capacity of the plant of the Millbury Scouring Company is to be doubled. A new building, 80 by 40 feet, 2 stories, wooden and a storehouse 40 x 40 feet will be built.

—*Massachusetts, Millbury. Contract has been let by the Bowden Felting Mills for the erection of an addition to the plant, 160 by 60 feet. Part of the new addition will be utilized for carding, some for finishing and the rest for hardening the product of the mill. Plans are under consideration for building a second addition.

—*Massachusetts, North Chelmsford. Work has been started on foundations for an addition, 200 x 80 feet, 3 stories, costing about $30,000, to Geo. C. Moore's woolen mill.

—Massachusetts, North Rutland. Moulton Bros. are building an addition to their mill.

—*Massachusetts, Oxford. John S. Rich has completed the erection of a new shoddy mill here and will operate same in connection with shoddy plant at Millbury.

—Massachusetts, Pittsfield. The Tillotson Mfg. Co. is installing 15 more looms and other machinery in their Silver Lake Mill. They have also increased the force of operatives.

—Massachusetts, Plymouth. The Puritan Woolen Mills (American Woolen Co.), are enlarging the dye house with erection of a new building, 20 by 30 feet.

—Massachusetts, Worcester. The Piedmont Mills, operated by John R. Scott, have been leased by the Thayer Woolen Co., of No. Oxford, who will continue making same class of goods as made heretofore. Mr. Scott will operate the Capron Mill, at Uxbridge, which he has recently purchased.

—Michigan, Detroit. A new two-story frame building, 30 by 80 feet, is to be erected for the Standard Rug Co., 457 Michigan Ave. A. W. Bather is manager of the concern.

—*New York, Malone. J. O. Ballard & Co., erecting a new woolen mill at this place, contemplate starting operations in the new building January 1st, 1902.

—New York, Wset Cornwall. A new building, 65 by 68 feet, three stories, is under construction for the Firth Carpet Co.

—Pennsylvania, Bristol. Plans and specifications are being prepared by Archts. Seymour & Davis for the erection of a large addition and extensive alterations to W. H. Grundy & Co.'s worsted yarn mills. The new edition will be four stories, brick.

—Pennsylvania, Chambersburg. After Jan. 1st, 1902, H. M. White will assume presidency of the Chambersburg Woolen Co., E. N. Hutton, secretary and treasurer and D. K. Appenzeller, manager. Mr. J. S. Murr, who is occupying place of superintendent of the plant, will continue under new regime. A new wool house is to be built and also a picker house. New spinning mules will be installed on the fourth floor of the mill and a new 150 h. p. engine installed to increase the power.

—Pennsylvania, Chester. An addition, 50 by 64 feet, one story, is underway to the dye house of Geo. C. Hetzel's woolen mill.

—Pennsylvania, Craigsville. W. F. Romberger has purchased the controlling interest in the Craigsville Woolen Mill. The plant will be enlarged and new and improved machinery installed.

—Pennsylvania, Crum Lynne. Work has been started on the erection of a brick addition, 40 by 80 feet, 2 stories, in the rear of the present building of the Crum Lynne Worsted Mills, S. Longbottom & Sons, proprietors. Several new looms will be placed in the old plant and also in the new addition, when completed. The company also contemplates tearing down the old frame building, now used as storage warehouse for wools, etc., and building a 3-story brick building on the site.

—Pennsylvania, Philadelphia. Krook & Brusch Co., Ltd., carpet yarn spinners, are to double the machinery equipment of the plant, and have ordered the necessary machinery from the M. A. Furbush & Son Machine Co.

—Pennsylvania, Philadelphia. F. W. Walter & Co., Broad St., manufacturers of shoddy, have recently added a new set of 60-inch Furbush cards, also a 250 H. P. engine has been installed.

—Pennsylvania, Philadelphia. Hirst & Rogers, Allegheny Avenue, carpet manufacturers, will erect an addition, 42 by 52 feet, 2 stories high, brick, of slow burning construction.

—Pennsylvania, Spartansburg. The Edwards Woolen Mill is to be enlarged to twice the present size. Work has been started already on foundations for the new building. Machinery will be added making it a complete two-set plant.

—Rhode Island, Olneyville. The Weybosset Mills have leased space on Stoke Street and have established a sewing and burling department there.

—*Rhode Island, Pascoag. Fred L. Sayles & Co. contemplate having their new mill, 115 by 40 feet, two stories high, ready about December 1st, in which they will install 64 looms. Twenty will be put in as soon as the building is completed.

—*Tennessee, Chattanooga. The extract Wool & Merino Co. will double its production and also increase the number of operatives.

—Vermont, Springfield. William H. H. Slack & Bro., shoddy manufacturers, will add 400 additional H. P. capacity to their mills. They have purchased the privilege and plant of Henry Parker Co., about three miles distant, and will use electricity to transmit the power.

Mills Starting Up.

—*Connecticut, Montville. Operations have been started upon a small scale in the Montville Woolen Mill.

—*Massachusetts, North Dana. Operations have been resumed in Crawford & Tyler's mill, which has been closed for necessary repairs.

—*New Hampshire, Wilton. Nash Simons has been appointed treasurer and manager of the Hillsboro Mills, recently bought by a syndicate in which W. G. Abbott, of Philadelphia, is interested. Geo. C. Moore of North Chelmsford and W. G. Abbott are new stockholders in the company. It is understood that the old stockholders received $20 per share for stock.

Mills Shutting Down.

—Connecticut, Killingly. The Dayville Woolen Company, with mill at Dayville, Chas. F. Bard, president, is reported in financial difficulties and the plant has been shut down for an inventory. Several attachments have been made. Mr. Bard expects an adjustment of the company's affairs.

—Massachusetts, Otter River. Operations have been suspended for an indefinite period in the Whitney Woolen Co.'s mill.

—Missouri, Carthage. The Carthage Woolen Mill, of which Frank Hill is the

president, is to be shut down in about two weeks, and plant will be offered for sale. Mr. Hill's other property will also be closed out, as he contemplates moving away from this place.

—Pennsylvania, Mohn's Store. Operations have been suspended indefinitely in the Westney Hat Co.'s plant.

Knit.

New Mills.

—Connecticut, New Britain. D. M. Ranken, who has recently resigned as superintendent of the New Britain Knitting Co.'s plant, is reported as interested in new knitting mill projected here.

—*Georgia, Athens. Work has been started on buildings for the new knitting mill to be started here by Collett & Ingle, proprietors of the Athens Steam Laundry. Machinery is expected shortly and will be set up as soon as possible. Alonzo Dudley will be superintendent of the plant.

—*Massachusetts, Taunton. The new knitting mill, projected here for some little time, will be known as the Segregansett Knitting Mill.

—*New York, Sidney. The Monarch Knitting Co., about which we have previously given detailed report, expects to have the mill ready for operation December 1st. The machinery has nearly all arrived and been placed in position.

—*North Carolina, Kernersville. J. M. Greenfield's Knitting Mill is expected to start up in a few weeks. Mill will have an equipment of 12 machines, for making 84 needle goods. Will buy mixed cotton yarns and sell goods direct.

—*North Carolina, Randleman. The Randleman Hosiery Mills, which were destroyed by fire, are to be rebuilt and the company is in the market for new machinery and equipment throughout.

—Ohio, Roscoe. Thomas Le Retilley & Co., operating corrugated paper works, will start a small knitting mill here. The machinery is being installed and work will be started with about a dozen employees, number to be increased as business warrants. They expect to start production of goods in about two weeks.

—Ohio, Toledo. A knitting factory is to be established here by A. H. Jackson.

—*Ohio, Toledo. A building has been leased at 123 to 125 Summit St., by the Ohio Knitting Co., whose incorporation we recently noted. M. Rosenberg, who is the president of the company, has returned from Europe, where an order for a considerable amount of machinery was placed. He also will install much American machinery. Mr. Rosenberg was formerly manager of the Peerless Knitting Mills, which made all sorts of fancy knit goods, such as shawls, gloves, infants' and children's wear, etc., and it is presumed that the new plant will manufacture a similar line of goods. I. Willetts Mason, formerly salesman with the Peerless Mills, has been elected secretary of the Ohio Mills. The new concern will sell exclusively to the jobbing trade.

—*Pennsylvania, Maiden Creek. The Maiden Creek Hosiery Co., capitalized at $5000, started operations November 1st, making infants' hosiery. They operate 19 knitting machines. Franklin Seidle is president; Solomon R. Rothermel, treasurer and Wm. H. Brasch, superintendent.

—*Pennsylvania, Nanticoke. Part of the machinery for the new stocking factory to be started up here by Paul Barrall has been received and will be set up as soon as possible, so that plant may be started.

—*Pennsylvania, Reading. The new knitting mill which will be started here about Nov. 20th, will be operated by H. R. Epler & Son, making men's half hose. The plant will be equipped with nine machines and operated by steam power. They have not yet contracted for dyeing machinery and press for knit goods.

—Pennsylvania, Reading. The Reading Hosiery Co.'s new mill, 131 by 55 feet, 3 stories, has been completed and operations will start at once with 32 knitting machines. When fully equipped the mill will have capacity of 1000 hose per day.

Enlargements and Improvements.

—*Connecticut, Bristol. The Bristol Manufacturing Company expects to have the new machinery, consisting of 3 sets Davis & Furber carding and spinning machinery and other equipment, in operation in a few weeks.

—Delaware, Wilmington. Ten new knitting machines have recently been installed in the Diamond State Hosiery Company's mill, in operation since last spring.

—Delaware, Wilmington. The Chas. Taylor Co., manufacturers of hosiery, has installed two new dyeing machines in the plant.

—Georgia, Barnesville. The Oxford Knitting Mills, making men's and ladies' high grade ribbed underwear, will start work at once on installation of a bleachery in the plant. It is expected that same will be in operation in about three weeks, under charge of Peter Harris.

—*Illinois, Chicago. The new building for the Strauss-Cahn Knitting Co., will be equipped with 30 new knitting machines. This concern makes all kinds of knit goods.

—*Massachusetts, Wakefield. Winship, Bolt & Co. contemplate occupying their new addition, about which we have previously made report, in about two or three weeks.

—*New York, Fort Plain. Daniel I. Devoe, who is moving his plant to the building formerly occupied by Elwood Bros., advises us that he is also installing some new machinery.

—New York, Newport. Arrangements are being made by the Newport Knitting Co. for building a new storehouse, 100 x 40 ft.

—*New York, St. Johnsville. The Royal Knitting Company's new mill has been completed and has been opened with a reception and dance.

—New York, Utica. A large building is under construction for the Fisher Knit Goods Co., at corner of Washington and Liberty Sts.

—*New York, Utica. The new mill under construction for the Capron Knitting Company, at 19-25 Whitesboro St., is for making ribbed underwear and will be equipped with 40 new machines. The old plant is located at 175 Whitesboro Street.

—North Carolina, Valdese. The Waldensian Hosiery Mill, Garron & Co., proprietors, are installing additional machinery in the plant. They have also added a complete dyeing equipment.

—*Pennsylvania, Boyertown. Geo. Unger, who is building an addition to his underwear mill, 3 stories high, will also add another story to the main plant, giving increased space.

—Pennsylvania, Easton. A new dye house, 25 by 152 feet, is being erected for Chas. Chipman's Sons' hosiery mill. They are also building a brick addition, 30 by 38 feet, three stories, to a portion of the main building, making it four stories high. This addition will be used for the extracting department. Capacity of the plant will be greatly increased.

—Pennsylvania,, Hawley. Additional machinery for the U. S. Knitting Mills Co.'s plant at this place is being contracted for by Messrs. G. F. Simons and E. F. Ludwig. Additional help will be employed when machines are placed in position. This concern manufactures sweaters of all kinds, golf leggins, cardigan jackets, etc.

—*Pennsylvania, Hawley. Denhardt & Schlager, successors to Denhardt & Hardler, are building an addition 24 x 40 ft., three stories, which they contemplate having completed in the spring. New machinery will be installed in same. The company manufactures sweaters, vests, jackets, golf hose, etc.

—Pennsylvania, Leesport. Eight new ribbers and nine knitters, also a new boiler, have been installed in the Leesport Knitting Mills, Miller & Balthasar proprietors, making seamless half hose and misses' fine ribbed hose.

—Pennsylvania, Middletown. New knitting machinery is being placed in H. A. Romberger's mill for half hose.

—Pennsylvania, Milton. The West Branch Hosiery Co. has completed the installation of 25 more knitting machines in the plant.

—Pennsylvania, Philadelphia. Thomas Buck & Co., York and Jasper Sts., manufacturers of cotton hosiery, are making extensive improvements to their mills.

—Pennsylvania, Pottstown. An enlargement is to be made to the Pottstown Knitting Company's hosiery mill, making ladies' hosiery and half hose.

—Pennsylvania, Reading. W. J. Bobst, manufacturer of hosiery, has recently installed 25 new knitting machines in the plant.

—Pennsylvania, Reading. Geo. C. Guenter, making half hose and children's and ladies' hosiery, has recently installed 12 additional machines.

—Pennsylvania, Reading. The Pennsylvania Knitting Mills (men's and ladies' cotton hosiery), are adding new machines.

—Pennsylvania, Shamokin. The machinery equipment of I. W. Forry & Son's hosiery mill has been increased by adding new.

—Pennsylvania, So. Bethlehem. A new dye house is under construction for Geo. D. Dobbins, manufacturer of hosiery. The new building will be brick, one story high and will replace a frame building previously used for dye house.

—Pennsylvania, Williamstown. The Diamond Knitting Mills propose building a new dye house.

—South Carolina, Manning. A further addition to his mill is contemplated by W. Scott Harvin.

—Wisconsin, Racine. Plans are being made for enlarging the plant of the Racine Knitting Company, to twice its present size.

Mills Starting Up.

—*Alabama, Birmingham. The Birmingham Hosiery Mills, making men's, women's and children's hosiery, and with which J. A. Yates is interested, has started operations in the new mill.

—*Connecticut, New Britain. Operations have been resumed in the several departments of the New Britain Knitting Company, recently closed for repairs.

—Massachusetts, Millbury. It is reported that the plant formerly operated by Crane & Waters, will be put in repair and started up by a New York party manufacturing underwear.

Mills Shutting Down.

—*New York, Cohoes. It cannot be stated definitely when the Halcyon Mills will be put in operation.

—*New York, Herkimer. The Gem Knitting Mill, in which H. G. Munger and C. R. Snell recently purchased an interest, has been shut down. It is stated that a re-organization of the company is necessary and until this has been done the plant will not be operated.

—New York, Little Falls Rankins & Porter, reported last July as starting a small knitting mill for manufacturing ladies' fine Jersey underwear, are giving up the business. The affairs of the firm and disposing of its effects are being attended to by Mr. Rankins.

—Pennsylvania, Gettysburg. The hosiery mill at this place has been shut down on account of inability to secure sufficient employees. Machinery has been moved away.

—Pennsylvania, Schuylkill Haven. The Star Knitting Mill, Baker Bros., proprietors, has been shut down for an indefinite time.

—*Rhode Island, Woonsocket. Work will be started soon on dismantling the United States Rubber Company's mill, which is to be removed to Millville, where it will be consolidated with the Lawrence Felting Co., under superintendency of Albert J. Bowes.

Silk.

New Mills.

—*Pennsylvania, Berwick. The main building of the new mill to be started here about Jan. 1st, 1902, by F. Q. Hartman, operating a plant of 37,000 spindles at Danville, will be 53 by 44 feet, with additions. Plant will be equipped with 15,274 spindles and a steam plant, 100 h. p. Thrown silks and specialties will be made.

—*Pennsylvania, Pottsville. The Penn Textile Manufacturing Co. is name taken by lessees of the Schuylkill Plush & Silk Mill. F. S. Haesler is president; William Burchley, Jr., vice-president; Charles T. Bowen, treasurer; B. J. Smith, secretary and Francis Stubbs, manager.

Enlargements and Improvements.

—Connecticut, Stonington. The American Velvet Co. is to install a new boiler in the mill, making a third one which has now been added. A new 75-ft. chimney is also to be built.

—New Jersey, Plainfield. The Watchung Silk Company will start work at once on the erection of a one-story brick building in which they will install ten new looms for manufacturing silks.

—Pennsylvania, Copley. The Lehigh Valley Silk Mills, now operating 125 looms, are to add 50 or 60 more. An addition is to be built to the loom shed.

Mills Starting Up.

—*Pennsylvania, Pottsville. Operations have been started up in the plush mill, now under control of the Penn. Textile Manufacturing Co.

Mills Shutting Down.

—Pennsylvania, Taylor. It is reported that the Laurier Sons Silk Co.'s mill has been shut down owing to financial difficulties. A meeting is to be held by the First National Bank of Scranton to take action in the matter.

Miscellaneous.

New Mills.

—*New York, Binghamton. The new plant to be established here, in which Mr. Bethel Ware's name has been connected, will be known as the Binghamton Fabric Printing Company, with capital stock of $25,000, $2500 of which has been paid in. They have a special method of printing on silk, satin and felt.

Enlargements and Improvements.

—Connecticut, Norwich. Two new printing machines have recently been added to the equipment of the United States Finishing Company's plant. Other new and improved machinery is being installed.

—Massachusetts, Peabody. An addition of one story to one of the buildings of the Danvers Bleachery is underway.

—New York, Garnerville. The Rockland Print Works contemplate making additions and improvements to the plant which will greatly increase capacity.

—*Rhode Island, Woonsocket. The new building to be erected on land recently purchased by Mark Hough will be thoroughly equipped for a dye works and bleachery for woolen, worsted and cotton yarns, braid, tape and knit goods. He has been occupying dye house formerly owned by the American Worsted Co. Contract has been let for the erection of the building which will start at once.

Mills Starting Up.

—*New Hampshire, Meredith. The Atlas Linen Company is name of the new concern which will operate the mills at this place. The capital stock is $170,000. J. Minot Hall is president and Alfred F. Hall, treasurer. Company proposes having the mill in operation by January.

—*Pennsylvania, Reading. Operations will be started in full immediately by the Prospect Dye Works, which have rebuilt the plant destroyed by fire.

—Pennsylvania, Shoemakersville. Operations are to be started the first of next week in the Crystal Spring Dye & Bleach Works. Rubright and Grim, proprietors.

—*Pennsylvania, Yardley. Operations have been begun in the new drying house of the Cold Spring Bleaching & Finishing Works.

Mills Shutting Down.

Fires.

—New York, Brooklyn. The Planet Carpet Mills were damaged by fire recently to the extent of about $25,000.

—North Carolina, Shelby. Lura Knitting Mill, manufacturing women's hosiery and men's half hose, has been destroyed by fire. Property was insured for about $6500.

—Pennsylvania, Allegheny. Julius De Long & Co.'s plant for manufacturing hair felt, carpet linings, etc., has been destroyed by fire. Loss is estimated at $50,000.

—Pennsylvania, Clifton Heights. The drying house and dyehouse of the Kent Mfg. Co. have been destroyed by fire. The loss is estimated at about $4000.

—Pennsylvania, Huntingdon. Harvey E. Funk's hosiery mill has been destroyed by fire. The loss is estimated at $10,000, with insurance of about $6500.

—Rhode Island, Coventry. The old building known as the Nipnuck Mill, and formerly operated as a yarn plant, has been destroyed by fire.

—Rhode Island, Providence. Henry Davis & Sons' shoddy plant was damaged by fire recently to the extent of about $10,000.

Failures and Suspensions.

—Massachusetts, Boston. John C. Meyer, 80 Kingston Street, made an assignment Nov. 7th, 1901, of all his property in trust for the benefit of the creditors. It is thought that an early

settlement will be made of the affairs. Matt B. Jones, Arthur T. Bradlee and John F. F. Brewster are the assignees. The Meyer Thread Co. has made a conveyance of its property in trust to S. C. Powers and N. B. Jones.

—Massachusetts, East Brookfield. A petition of voluntary bankruptcy has been filed by Winfield Scott. The liabilities are estimated at $75,000, largely secured, with assets of $41,000. Burton W. Potter is receiver.

—*New Jersey, Paterson. A corrected report of the liabilities and assets of Jacob Freisch, states that they are $65,000 and $32,500 respectively, instead of $85,222 and $58,977.

—New Jersey, Paterson. Neale & Goode, silk dyers of this city ,have made an assignment. The liabilities are $11,482, and the amount of the assets is in doubt.

—Pennsylvania, Philadelphia. The Charmwood Hosiery Co., Lehigh Ave. and Mascher St., manufacturers of full fashioned cotton hosiery, are reported to have made an assignment to Leonard M. Addis and Wolfgang Richter.

Facts and Gossip.

—California, San Jose. E. A. Noyes and the Investment Committee are interested in locating a carpet factory at this place.

—Canada, Hamilton. The Yarmouth Duck & Yarn Company, of Yarmouth, N. S., has been absorbed by the Imperial Cotton Company, of Hamilton, Ont. Preparations will be made for increasing the output.

—Connecticut, Killingly. The Elmville Woolen Company has been incorporated with capital stock of $10,000, by S. L. Hecht, Louis Rittenberg and John Horan.

—*Connecticut, Mechanicsville. The French River Textile Co.'s mill, previously reported as likely to be sold, will be continued in operation by the present company, with Frank A. Sayles, president; Alfred Coates, treasurer, and C. Fred Waterman, and Geo. P. Newell the new agents and managers.

—*Connecticut, Montville. A report concerning the restarting of the Montville Woolen Mill states that the machinery has been put in order, and that operations will be resumed next week.

—*Connecticut, Norwich. The Otrobando Woolen Co.'s mills, which have been placed at auction several times, have been purchased by Charles Bard, representing Rhode Island capitalists.

—*Delaware, Dover. The Post & Sheldon Silk Co., manufacturing broad silks and operating 60 looms, have purchased the buildings in which the plant is located.

—Georgia, Athens. Geo. H. Palmer will resign his position as secretary for the Athens Manufacturing Co., January 1st, and will be succeeded by A. D. Cheney. J. H. Dootson, formerly agent and buyer for the company, has left and F. P. Vincent, president, has taken up that work.

—Georgia, Cedartown. The Cedartown Cotton & Export Co. has been incorporated with capital stock of $100,000, Daniel Baugh (Philadelphia) president; J. Wright Adamson (Cedartown) secretary, and Thomas Adamson, (Cedartown) treasurer.

—Georgia, Conyers. A 10,000 spindle mill, at estimated cost of $250,000, is reported to be built at this place.

—Georgia, Griffin. Arrangements are now being made by W. J. Kincaid, J. M. Brawner and Charles Wheeler to incorporate and organize a $100,000 company to develop the water power at High Falls, and also erect textile mills in connection with same.

—*Georgia, Lawrenceville. The Gwinnett Cotton Mills, recently placed in the hands of a receiver, are to be placed on sale January 4th.

—Georgia, Maysville. J. W. Shephard and others are interested in a $100,000 cotton mill projected here.

—Georgia, Quitman. A cotton mill is being projected at this place.

—Illinois, Stockton. The Stockton Woolen Mill, which has been idle for some time, and which has an equipment for manufacturing blankets, has been sold to a St. Paul party. Walt Mackay consummated the deal.

—Illinois, Waukegan. Samuel Stevenson, formerly with the Dowie Lace Factory at Zion City, contemplates starting up a plant of his own.

—Indiana, Madison. It is reported that a Mr. Thompson of New York, and Mr. Head, of Hillsboro, O., are negotiating for the purchase of the Ross Textile Mfg. Co.'s mill, which is equipped for making blankets, cheviots, cassimeres and fine horse blankets. Mr. Ross declines as yet to make a definite statement.

—*Louisiana, Monroe. The Ouachita Cotton Mills, which were reported as likely to start operations in October, will not begin next spring on account of the delay in receiving equipment.

—Massachusetts, Canton. The Eureka Silk Company has been placed in the hands of receivers, Theophilus King (Quincy), William H. Barnard and Edward Putney (New York), at instigation of suit brought by William Ryle & Co., New York, with claim for $121,053. The liabilities of the concern are estimated at about $390,000.

—Massachusetts, Cherry Valley. Philip M. Plaffman has purchased the mill interests of Lucin B. Butler. This refers to the Hunts Mill, which has an equipment of two sets of cards and 32 looms, making satinets.

—*Massachusetts, Fall River. The proposition for bonding the Hargraves and Parker Mills has been adopted. Seth A. Borden was elected treasurer and Milton Reed clerk at meeting recently held.

—*Massachusetts, Lowell. C. Brook Stevens, treasurer of the United States Bunting Company, purchased the Whittier Cotton Mill building, machinery not included, for $14,000, at the sale on the 7th.

—Massachusetts, Marlboro. It is reported that a dye works establishment will be put in operation here by T. J. Baudry.

—*Massachusetts, Milford. Jesse A. Taft, an attorney of this place, purchased the plant, patents and machinery of the National Silk Yarn Co., previously known as the Magid-Hope Silk Co., for $19,200, at the same time assuming a mortgage, making the total price paid nearly $42,200. Mr. Taft has not made public the names of his principals.

—*Massachusetts, Millis. An effort is being made to have some cotton company locate here and operate the National Flax Fibre Co.'s mill, which has been closed, without much doubt, permanently.

—Massachusetts, Monson. L. R. Rosenburg, associated with J. H. Loudon, of the Golden Rod Woolen Mill at Wales, has purchased the branch mill of S. F. Cushman & Sons, leased by the Massasoit Woolen Company, whose lease expires on January 1st. It is stated that a satisfactory agreement has been made and that Mr. Rosenburg will take charge of the mill on December 1st.

—Massachusetts, Otter River. A. H. Turner has sold the looms in his woolen mill.

—*Massachusetts, Waltham. The Waltham Bleachery & Dye Works has been incorporated with a capital stock of $480,000 with Francis I. Amory, president and Arthur T. Lyman, treasurer. This plant was formerly operated by the Boston Mfg. Co., and this is part of the reorganization plan previously reported.

—Mississippi, Hashuqua. A report states that W. J. & J. H. Hubbard, lessees of the Hashuqua Mfg. Co., will discontinue operating the mill.

—Mississippi, Vicksburg. A movement is on foot for the organization of a company to build a cotton mill here. It is thought that Northern capitalists will be interested in the project.

—*New Brunswick, St. John. Application for incorporation has been made by James F. Robertson, and associates for the Cornwall and York Cotton Mills Co., Ltd., with capital stock of $500,000, to operate the Parks Mills. They also propose generating and supplying electricity, power, heat, etc. Subscriptions to the capital stock are being received.

—New Hampshire Enfield. It is reported that the American Woolen Company contemplates erecting a new plant above the Baltic Mills.

—New Hampshire, Milford. Quinlan & Co.'s bleachery, which has been undergoing repairs, is now in full operation.

—New Hampshire, Manchester. H. P. Ray's lease of labor at the State Industrial School for the past five years, for manufacturing stockings, is about to expire and the trustees are reported to be not in favor of renewing same. Mr. Ray proposes establishing the plant, which has been operated under name of the Manchester Stocking Co., elsewhere, if the lease is not acted upon favorably.

—New Hampshire, Nashua. The Nashua Mfg. Co. and the Jackson Co. have started their plants on a short hour system.

—New Jersey, Camden. The John Lunn Company has been incorporated with capital stock of $50,000, $15,000 paid in, for scouring wool. This company will operate the plant formerly run by the Phila. Wool Scouring & Carbonizing Co., which failed.

—New Jersey, Carlstadt. A new textile plant is reported to be built here, by a Mr. Umbach, brother of William Umbach.

—New Jersey, East Orange. The H. B. Wiggins' Sons Company has been incorporated by J. N. Wiggin, J. R. Turner and E. T. Magoffin, with capital stock of $125,000. They propose manufacturing tapestries, silk goods, etc.

—New Jersey, East Orange. The Ashtabula Worsted Mills, capital stock $150,000, have been incorporated for the purpose of manufacturing woolen goods, through the office of the New Jersey Registration & Trust Co., 525 Main St., East Orange. Cleveland B. Childs, James R. Mapletaft and H. A. Smith are the incorporators.

—New Jersey, Vineland. It is reported that a silk mill is to be located at this place.

—New Jersey, Paterson. The Paterson Savings Institution, which holds considerable mill property, is to erect new mill building, 300 by 60 feet, 5 stories high, equipped with its own electric lighting plant, at a cost of about $100,000. The new plant will be known as the Harmony & Industry Mill.

—New Jersey, Paterson. The Loyal Silk Manufacturing Co., operating 8 looms, has been incorporated with capital stock of $25,000, by Wm. H. Dobbs, Geo. A. Main and Wm. C. Cuthbert.

—New Jersey, Peterson. S. Isaac is sole proprietor of the Buffalo Silk Mfg. Co., which will have 16 looms in operation shortly on taffetas.

—*New Jersey, Trenton. It is reported that the executors of the estate of S. K. Wilson will apply for a decree declaring the estate insolvent. It has been found that the property left by the late Mr. Wilson does not exceed the liabilities.

—New York, Buffalo. A project is on foot for the organization of a company with a capital of $250,000, which contemplates building a large silk mill here.

—New York, Cohocton. The Business Men's Association, M. A. McDowell, secretary, is endeavoring to get a silk manufacturing concern to locate a branch mill here.

—New York, Cohoes. The Halcyon Mills are reported as running out stock for the purpose of taking an inventory in order to settle up the estate of the late William Nuttall.

—New York, Hudson. A syndicate has been formed and secured the Harder Knitting Co.'s mill and the Union Knitting Company. They will assume control of the mills after December 1st. Mr. Harder will take no further interest in the management of the one mill, devoting his time exclusively hereafter to the yarn mill at Valatie. W. Frank Holsapple, of the Union Knitting Co., will probably be general manager of both mills. Messrs. William H. and John Hearn will superintend the Union and Harder Mills respectively.

—*New York, Ithaca. At a recent meeting of the Business Men's Association, it was announced that Charles Brown, silk manufacturer of New York, is interested in establishing a silk mill at this place, and asks for a site, but will supply his own capital. It is not yet known just what action will be taken regarding the project.

—*New York, Oswego. The Switz Conde Knitting Company and the Standard Yarn Company have been consolidated as the Switz Conde Company. The capital stock will be from $300,000 to $500,000. Geo. B. Lecnard has been elected treasurer of the new company.

—*New York, Waterford. Samuel Benson purchased the Clyde Knitting Mill property at auction, November 20th, for $2600. The stock was sold to various parties.

—North Carolina, Claremont. It is reported that a cotton mill is to be established here. Work is to be started on construction of the building early in the spring.

—*North Carolina, Newbern. The Pembroke Manufacturing Co., which was reported incorporated to build a cotton mill and subsequently decided not to erect the plant until later, has gone into voluntary liquidation, and the project has now been abandoned.

—*North Carolina, Rockingham. The Great Falls Mfg. Co.'s plant was bid in by D. L. Gore of Willington, N. C., at auction, for $37,000. It is thought that the mill will be put in operation.

—*Ohio, Cincinnati. We have been advised that the report concerning purchase, etc., of the Covington Woolen Mills Co.'s plant at Covington, Ky., is a trifle premature, but that efforts are being made to interest capital for the purpose, athough nothing can be definitely stated for about 30 days.

—Ohio, Cincinnati. J. J. Hooker, of Putnam, Hooker & Co., and J. Albert Green, of Matthew, Addy & Co., are interested in the project of establishing a cotton mill here. Negotiations for the land are reported to be in progress. The proposed building is to be brick, four or five stories, with capacity for 50,000 spindles.

—*Ohio, Cleveland. At a meeting of the directors of the Turner Worsted Co., it was voted to increase the capital stock from $400,000 to $800,000. This will provide for the new mill which is now in process of erection, and of which previous report has been made. They also voted to change the name of the company to the Cleveland Worsted Mills Co. on January 1st, as the Turners, for whom the plant was originally named, now have no connection with it. O. M. Stafford is now president and K. Hayes treasurer and G. H. Hodgson, manager.

—*Oregon, Brownsville. The property of the Eagle Woolen Mills Co. will be resold on November 16th, on account of being bid at too low a figure at the first sale.

—*Pennsylvania, Attleboro. Plans have been prepared by Frederick Rumpf's Sons, whose plant was destroyed by fire, for new buildings to replace same.

—Pennsylvania, Avon. The Lebanon Textile Company has purchased the Avon Knitting Mill, which plant they are operating.

—Pennsylvania, Boyertown. N. H. Moyer, proprietor of the Franklin Knitting Mill, will remove his establishment to another town. It is stated that another industry will be located in the building vacated.

—Pennsylvania, Duncannon. It is reported that local capitalists are interested in establishing a knitting mill and have purchased a building for the purpose.

—*Pennsylvania, Halstead. The Halstead Silk Mill will be sold on Nov. 16th by the sheriff. This mill has been shut down for about a year.

—Pennsylvania, Hawley. Mr. Hardler of Denhardt & Hardler, proprietors of the Wayne County Knitting Mills, has been succeeded by C. J. Schlager. Firm name is now Denhardt & Schlager.

—*Pennsylvania, Huntingdon. Harvey E. Funk's hosiery mill, which has been burnt, will be rebuilt.

—Pennsylvania, Philadelphia. Louis Walther &Co., manufacturers of dress goods, have now incorporated the firm as Louis Walther Manufacturing Co., with capital stock of $100,000.

—*Pennsylvania, Philadelphia. The Lincoln Worsted Mill, of which George Sidebotham is superintendent, and which recently made an assignment, will continue to be operated by the receiver. This mill has 10 looms on men's worsted goods.

—Pennsylvania, Plymouth. It is reported that the Wyoming Knitting Mill, Thomas West, proprietor, will be closed on account of demand by the operatives for increased wages, and the machinery removed to another mill of Mr. West's at Danville.

—*Pennsylvania, Trevorton. The Trevorton Silk Mill, Theo. A. Wagner, secretary, is negotiating with John Sprich, with Erstein & Co., New York, relative to starting up the plant. Nothing definite has yet been agreed upon.

—Pennsylvania, Womelsdorf. H. W. Sheeler, operating the Womelsdorf Knitting & Hosiery Mill, has made a proposition to the Board of Trade at Lebanon, regarding establishing the plant there.

PERSONAL RECORD.

Cotton.

—W. E. Ball of the Social Mill, Woonsocket, R. I., has been engaged by W. E. Keach, superintendent of the Grant Yarn Company, Fitchburg, Mass., as overseer of spinning.

—James Brennan has resigned as overseer of carding for the Samoset Company, Valley Falls, R. I., to accept a similar position in a mill at Taunton, Mass. The employes at the mill presented him with a marble clock just before his leaving.

—William Clark, who is in charge of the old Valley Falls Company's mill at Woonsocket, R. I., that is being operated temporarily by the Naushon Company, wil assume the superintendency of the new mill being erected by the company at Valley Falls, R. I., on its completion.

—R. F. Cable has been engaged as boss weaver at the Odell Mill No. 5, Concord, N. C.

—J. H. Dootson, formerly agent and buyer for the Athens Mfg. Co., Athens, Ga., is succeeded in these duties by President F. P. Vincent. George H. Palmer, who has filled the office of secretary for the firm for many years, will resign the 1st of January, and will be succeeded by A. D. Cheney.

—W. B. Fittz, superintendent of the West Boylston Mfg. Co., Easthampton, Mass., has severed his connection with the company, on acocunt of ill health, and George A. Ayer of New Bedford, has been appointed his successor. Several minor changes have also been made at the mill.

—A. M. Grady, who has had charge of the weave room at the Tuscaloosa Mill, Cottondale, Ala., has returned to his home in Wilmington, N. C.

—Charles Goodrich, employed for the last 24 years as overseer in the Hadley Thread Co., Holyoke, Mass., has- re signed his position.

—Buckley Holden, late of Central Falls, R. I., and formerly of Saylesville, R. I., has taken charge as overseer of the cloth room for the Lorraine Manufacturing Co. at Westerly, R. I.

—W. H. Harrison, who for several years has been overseer of the carding department at the Union Mills of the Aldrich Manufacturing Company, Moosup, Conn., has secured a similar position with the West Boylston Mfg. Co., Easthampton, Mass.

—William Hinchcliffe, superintendent of the Whitney Mfg. Co., Whitney, S. C., has resigned to take charge of the Lynchburg Cotton Mills, Lynchburg, Va.

—Henry G. McCarten is the new superintendent of the Conestoga Mills, Lancaster, Pa., which are operated by John Farnum & Co.

—Z. T. McKinney, superintendent of the Trion Mfg. Co., Trion Factory, Ga., has severed his connection with that company and gone to Greenville, S. C.

—Luther Moore, formerly superintendent of the Harriman Cotton Mills, Harriman, Tenn., has accepted a position as boss carder and spinner with the Ada Mfg. Co., Charlotte, N. C.

—L. M. Odell, for some years connected with the W. R. Kindley Cotton Mills, Mt. Pleasant, N. C., has accepted a position as overseer of spinning at the No. 2 mill of the Odell Manufacturing Co., Concord, N. C.

—G. H. Peckham, superintendent of the Rushton Cotton Mills, Griffin, Ga., has resigned to take a similar position in Selma, Ala.

—P. H. Phillips, formerly superintendent of the Wadesboro Cotton Mills, Wadesboro, N. C., is now acting in a similar capacity for the Bennettsville (S. C.) Manufacturing Co.

—S. W. Patterson, late of the Rushton Mills at Griffin, Ga., has taken charge of the weave room of the Estelle Cotton Mills, Selma, Ala.

—At a special meeting of the directors of the United States Cotton Duck Corporation, held in New York, Trenor L. Park of New York was elected president to succeed Richard Cromwell. Mr. Park is the senior member of the firm of Catlin & Co. Mr. Cromwell in tendering his resignation stated that the duties of the president required a younger and more active man, but that he was ready to co-operate with his successor in every way possible.

—J. T. Powers, who was superintendent of the Eagle Mill, Adams, has taken the superintendency of I. E. Palmer's mill at Middletown, Conn.

—G. R. Spencer of Covington, Tenn., has been engaged as superintendent of the Tavora Cotton Mills, formerly the Sutro Cotton Mills, of Yorkville, S. C. This establishment has been closed for some time, and was lately sold at auction, being bought in by the bondholders, who have engaged Mr. Spencer to start the plant, which is being overhauled throughout and equipped with new and improved machinery.

—T. L. Saunders, Jr., who for the past four years has been connected with the Cannon Manufacturing Co., Concord, N. C., as overseer of carding and spinning, has resigned and accepted a position as night superintendent with the Trenton Cotton Mills, Gastonia, N. C.

—C. P. Thompson has resigned as overseer in the Easley Cotton Mill, Easley, S. C., to accept a position in the Monaghan Mills, Greenville, S. C.

—Gustav Wahlgren has been appointed principal of the designing department of the New Bedford Textile School. Mr. Wahlgren is a graduate of a European

Textile School, is an expert designer, and for several years has been engaged as the designer for the Whitman Mills, in New Bedford, Mass. These mills make as large a variety of figured cotton goods as almost any mills in the country, and Mr. Wahlgren's experience there will be of special advantage in the New Bedford Textile School.

—William Wamsley has resigned as overseer in the Hargraves Mills, Fall River, Mass., to accept an overseership in a mill in Eastern Massachusetts.

Woolen.

—F. H. Appleby has been engaged as superintendent and designer by the Miller River Mfg. Co., Athol, Mass.

—Joseph Appleyard is the new overseer of dyeing at the Auburn Manufacturing Co., Auburn, Mass. He was recently at Chester, Pa.

—E. Butler of Millbury, Mass., has recently accepted the position of boss finisher with Gay Bros., Cavendish, Vt.

—Joseph Charlesworth, formerly overseer of spinning for the Ounegan Woolen Co., Old Town, Me., has accepted a similar position with the Wilton (Me.) Woolen Mills.

—John F. Carleton, who for a number of years has served as overseer in various departments of the woolen mill of Mayo & Son, Foxcroft, Me., has been granted a vacation of a year on part pay. Mr. Carleton has reached the age of 70 years.

—J. H. Carney, formerly boss weaver for Joseph Perry Woolen Co., Webster, Mass., has accepted a similar position with C. A. Root & Co., Uxbridge, Mass.

—John Campbell, for several years past boss dyer for the George H. Gilbert Mfg. Co., Gilbertville, Mass., has resigned, and B. Washburn of Lebanon, N. H., has been engaged to succeed him.

—E. S. Creamer has recently accepted the position of overseer of dressing with the Gilbert Mfg. Co., Ware, Mass.

—Joseph F. Daly, formerly employed as overseer of carding in Pittsfield, Mass., Stafford Springs, Conn., and other well-known woolen centres, is now engaged with Beebe, Webber & Co., Holyoke, Mass., in the same capacity.

—Oliver Davies, formerly overseer of the carding department at the Blackinton Woolen Mill, Blackington, Mass., has accepted a similar position with the Oregon City Woolen Mills, Oregon City, Oregon.

—David A. Donovan of Gilsum, N. H., has been engaged by the Hugh Sheridan Woolen Mill, Ashuelot, N. H., to take charge of spinning.

—John Dever, formerly of Langhorn, Pa., and later boss weaver in a woolen mill in Philadelphia, is now boss weaver at the Sterling Mills, Bridgeport, Pa.

—F. Ertinghausen has resigned as superintendent of the Brightwood Manufacturing Co., North Andover, Mass.

—John Ernshaw, formerly boss carder for the Esrey Mfg. Co., Chester, Pa., has accepted a similar position with the Meriden Woolen Mills, Meriden, Conn.

—W. H. Elliott is the new boss dyer at the Seneca Falls Woolen Mills, Seneca Falls, N. Y.

—J. Emery, formerly of Madison, Me., is now at Wilton, N. H., employed in the capacity of assistant superintendent with the Wilton Woolen Mills.

—Daniel Eadie, formerly with the Blackinton (Mass.) Company, has been engaged by Strong, Hewat & Co., North Adams, Mass., as master mechanic.

—G. O. Fiedler, recently from Pittsfield, and formerly designer for the Haile & Frost Mfg. Co., Hinsdale, N. H., has accepted a position with the American Mills Co., Rockville, Conn.

—Andrew Frazier, of Bound Brook, N. J., has accepted the position of overseer of carding for Mayo & Son, Foxcroft, Me., succeeding John Carlton, recently resigned, who has been employed in these mills in this capacity for the past 39 years.

—James Fredericks of Lawrence has been engaged to take the position of overseer of dyeing at the Hinsdale Wool Woolen Co.'s mills, Hinsdale, N. H., succeeding G. W. Padien, resigned.

—Elmer Green has been engaged as boss dyer at the Binghamton Felting Co.'s mills, Binghamton, N. Y.

—Carl Gerrish has accepted the position of overseer of weaving at George E. Kunhardt's mill, Lawrence, Mass.

—J. E. Hill, formerly with Seville, Schofield & Co., Philadelphia, Pa., is now superintendent for the Philadelphia Worsted Co., Camden, N. J.

—J. E. Hartley of Lawrence, has succeeded Joseph Blaine as overseer of dressing and warping for the Hinsdale Woolen Co., Hinsdale, N. H.

—William Hackley, late of Peterboro, Ont., is now boss dresser at the Crown Mill No. 1, Marcellus, N. Y.

—James Hirst, boss weaver of the Auburn Blanket Mills, Auburn, N. Y., has resigned his position and gone to Montville, Conn., where he will have charge of the weaving and designing.

—W. H. Jones, formerly of the Riverside Woolen Co., Stafford Springs, Conn., is now with the Ayershire Woolen Mills, Skaneateles, N. Y., as boss dyer.

—Bearnard Kearney has accepted the superintendency of the Taconic Mills, Pittsfield, Mass. He succeeds Robert A. Semple, who will in the future devote his time and attention to the interests of the company in the way of designing.

—Thomas J. Kelly, who was formerly with the Crown Mills, of Marcellus, N. Y., as secondhand of carding, has accepted a position as overseer of carding for the Saxton's River Worsted Co., Saxton's River, Vt.

—Herman Linder has secured the position of overseer of the cloth inspection department at Kunhardt's Mill, Lawrence, Mass.

—Richard Love is now assistant designer for the F. L. Sayles Co., Pascoag, R. I.

—John B. Lambert of Cohoes, N. Y., has secured the position of overseer of carding for the Virginia Textile Co., Lynchburg.

—A. A. Langewald, agent of the Saranac Worsted Mill of the American Woolen Co., Waterford, R. I., has resigned. Mr. Langewald will associate himself with his brother, F. A. Langewald, who operates a mill in Monson. Since Mr. Langewald's arrival here, about a year ago, he has been held in the highest esteem, and his departure is much regretted.

—James Morrison, who resigned as overseer of spinning and carding with the Hartford Carpet Corporation, Hartford, Conn., has accepted a similar position with Nye & Walt Carpet Co., Auburn, N. Y. Mr. Morrison was with the Hartford Co. 41 years.

—Russel Manter, formerly boss dyer at the Burlington Mills, Winooski, Vt., is now in a similar position with the Empire Woolen Co., Clayville, N. Y. He has succeeded C. E. Wing, resigned.

—Walter Macfeat, formerly of Gloucester Mfg. Co., Gloucester, N. J., and lately of Philadelphia, Pa., is the new dyer at the Kiamensi Woolen Co., Stanton, Del.

—James McLaughlin, formerly finisher at Philadelphia, is the new finisher at the Kiamensi Woolen Co., Stanton, Del. Mr. McLaughlin was finisher for eight years at this mill once before.

—Paul Neumarker, recently of Rockville, Conn., is now boss dresser at E. E. Hillard Co.'s mill, Buckland, Conn.

—F. J. Nash has resigned as boss carder at the Meriden Woolen Mills, Meriden, Conn.

—Joseph Nettleton has succeeded Howard Ranbo as boss spinner at the E. L. Barber carpet mill, Bridgeport, Pa. Mr. Ranbo has accepted a position as boss spinner at the Toronto Carpet Mfg. Co., Toronto, Ont.

—Michael O'Brien has been secured as overseer of carding by Andrews & Smith, who recently leased the Norwalk & Fairfield Worsted Mills at Norwalk, Conn.

—William Pfley is the new boss dresser at the Chambersburg Woolen Mill, Chambersburg, Pa.

—Irving Rambo has resigned as overseer of spinning for E. L. Barber, Bridgeport, Pa., to accept an overseer's position in the new yarn spinning plant now being installed by the Furbush Machine Company, for the Toronto (Ont.) Carpet Manufacturing Co.

—Otto Ruhlin, formerly employed in the Lawrence Dye Works, Lawrence, is now with the Success Worsted Mill, North Chelmsford, Mass., as boss finisher.

—C. H. Rowe, formerly of Rockwell's Mills, N. Y., is the new boss carder and spinner at the Seneca Falls Woolen Mills, Seneca Falls, N. Y.

—Thomas A. Sherlock, formerly overseer of carding with the Beattie Manufacturing Co., Little Falls, N. J., is now with E. L. Barber, Bridgeport, Pa., employed in the same capacity.

—Theodore St. George, formerly of Talcottville, Conn., is now employed by the Hartford Carpet Corporation, Thompsonville, Conn., as overseer of carding on wool filling yarns.

—A. M. Sager is now in the employ of the Ayershire Woolen Mills, Skaneateles, N. Y., as boss carder. He was formerly with the Amsterdam Knitting Mills, Amsterdam, N. Y., employed as boss carder.

—Allen Sutcliffe, formerly with Geo. Campbell & Co., Philadelphia, Pa., is now boss carder and comber for the Philadelphia Worsted Co., Camden, N. J.

—T. J. Saxton, formerly of the Ray Woolen Mill, Franklin, Mass., is now in the employ of the Chambersburg Woolen Mill, Chambersburg, Pa., as boss carder.

—Robert Swan, formerly finisher at the Monongahela Textile Co., Morgantown, W. Va., is the new finisher at the Knowles Woolen Co., New Castle, Del.

—James A. Taylor, formerly boss finisher with the Consolidated Woolen Felt Mills, Amsterdam, N. Y., and recently with the Clarksburg Woolen Mills, Clarksburg, West Va., has accepted a similar position at Downington, Pa.

—George Walker is now employed by the Pitkin, Holdsworth Worsted Company, New York, as overseer of carding and combing. He was formerly engaged in a similar capacity by the Phoenix Mills Company, Philadelphia.

—W. D. West has assumed the position of superintendent of the Conshohocken Woolen Company, West Conshohocken, Pa., operations having been resumed after a short period of dullness.

—William F. Wood has been appointed superintendent of the Norwalk & Fairfield Worsted Mills, Norwalk, Conn., leased by Andrews & Smith.

Knit.

—C. B. Atkins has resigned as boss knitter for the Bennington (Vt.) Knitting Co., and removed to Waterford, N. Y.

—W. M. Harding has charge of carding for the Koted Silk Underwear Co., Millbury, Mass.

—R. W. Lewis has been appointed superintendent of Kapner Bros. & Duga Hosiery Co.'s mill, Dresden, Ohio. Mr. Lewis was for many years with the Alling Mill, Derby, Conn.

—G. A. Long, recently of Pottsville, is now superintendent of the New Cumberland Knitting Mill, New Cumberland, Pa.

—C. E. Hames is superintendent of the Campbell Knitting Mill, Elmira, N. Y. He was formerly of the Utica Knitting Company, Oriskany Falls, N. Y.

—W. Harris, formerly of Cohoes, N. Y., is now boss knitter for the Clinton Knitting Company, Syracuse, N. Y.

—Fred Kennon, formerly boss knitter at Bennington, Vt., is now employed by the Campbell Knitting Mills at Elmira, N. Y., in a similar capacity.

—John Lynch has been promoted from secondhand of carding at the Walter Aiken Sons' hosiery mill, Franklin Falls, N. H., to overseer of that department.

—Harry Lewis is boss knitter at the Harrisburg Knitting Mill, Harrisburg, Pa.

—James McNamee, boss knitter for the New Britain Knitting Company, New Britain, Conn., has resigned. He has accepted a similar position with Gardiner & Warring at Amsterdam, N. Y.

—William McDonald, formerly superintendent of the Chadwick Mills, Chadwick, N. Y., is now with the Elmira Knitting Mill, Elmira, N. Y., in charge of the carding department.

—H. L. McEldrey has been elected president of the Talladega Hosiery Mill, Talladega, Ala., vice W. M. Frank, resigned.

—David M. Ranken, who for the past four years has been superintendent of the New Britain Knitting Co., New Britain, Conn., has severed his connection with the company. His successor is C. F. Turner, who has been at the factory for the same length of time as Mr. Ranken, and who was formerly associated with him in the knitting goods business in New York State.

—Paul Rothe is boss dyer at the Pennsylvania Knitting Mills, Reading, Pa. He was formerly of Norristown, Pa.

—Walter Scott has been engaged as boss for the No. 2 mill of A. V. Morris & Sons, Amsterdam, N. Y.

—Harry H. Spongler has recently accepted the position of boss knitter with the U. S. Hosiery Co., Reading, Pa. He was formerly employed in a similar capacity at the Keystone Knitting Mill, Reading, Pa.

—S. Sinford of Wilmington, Del., is superintendent of the Shamokin Knitting Mills, Shamokin, Pa.

—George A. Wilson, Danielson, Conn., has accepted the position of superintendent of the Littleton Hosiery Mills at Littleton, N. C.

—Edgar F. Williams is again in the employ of the Glastonbury (Conn.) Knitting Co. as engineer in their No. 1 mill.

—David A. Ward, for many years past foreman in the knitting mill of George Rockwood & Co., Bennington, Vt., has resigned his position because of ill health.

—Thomas Webster, formerly employed for a number of years by the Little Falls (N. Y.) Knitting Mills Company as overseer of carding, is now engaged by Robert Mackinnon in a similar capacity, in charge of carding in his knitting mill at Little Falls, N. Y.

Deaths.

—Alexander Ballou died at his home in Woonsocket, R. I., recently, of illness incident to old age. Mr. Ballou was a woolen manufacturer in Blackstone, Mass., from 1842 until within five years. He began as bookkeeper, later was promoted to superintendent, and for a number of years was a member of the firm of the Blackstone Woolen Co., which dissolved a few years ago. For the past ten years he had lived with his son, Walter I. Ballou, from whose home the funeral took place.

—Samuel Foster, for over forty years treasurer of the Williamsville Cotton Manufacturing Company, Killingly, Conn., died recently at Providence, R. I. He was in his ninety-ninth year. Four sons and one daughter survive him.

—David Beckett, of Paterson, N. J., widely known through his practical knowledge of the art of silk weaving, died at his home early last month. He was born in Paisley, Scotland, 57 years ago, and learned his business before coming to this country. He first settled in Philadelphia, but while on a business visit to Paterson, saw the advantage of introducing horizontal warping in this country, and induced the Ashley & Bailey Co. to try the system. Subsequently he took charge of the warping department of the Phoenix Mills, and introduced horizontal warping on a large scale. Ten years ago he went into business for himself and began the manufacture of ribbons, in which enterprise he was successful.

—William B. Threapleton, a hosiery manufacturer of Kensington, Pa., died early last month. He was born in Yorkshire, Eng., but came to this country when a boy. He took an active part in the Civil War, and after the war began the manufacture of hosiery, his mill being located at Howard and Huntingdon Sts. Mr. Threapleton was prominent in secret society circles. He leaves a widow, three daughters and two sons.

—Benjamin C. Adams, president of the Knox Woolen Co. and one of the most prominent and wealthy citizens of Camden, Me., died recently after a brief illness. He is survived by a widow and three daughters.

—Jacob H. Dietz of Ivins, Dietz & Metzger, carpet manufacturers, Philadelphia, Pa., died last month of heart failure, aged 68. Mr. Dietz was born in York, Pa., and went to Philadelphia in 1859. He served through the Civil War and returned to Philadelphia and embarked in the carpet business under the firm name of Ivins & Dietz, which later developed into the present firm. Deceased was unmarried, but is survived by a brother and sister.

—Austin Bidwell, for many years superintendent of the Glastonbury Knitting Co., Addison, Conn., died at his home in that place recently. He was born in Manchester seventy-four years ago, and had been connected with the knitting company for years.

—Sheldon S. Spencer, superintendent and manager of the Conestoga Steam Mills, owned and operated by John Farnum & Co., Lancaster, Pa., died on November 12, from heart failure, aged 77. Mr. Sheldon was well known among cotton manufacturers, being a member of the New England Cotton Manufacturers' Association and prominently interested in several local interests at Lancaster.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the compositionof yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Ring Spinner for Coarse Yarn.

Editor Textile World:

I noticed in the May, 1901, issue of the Textile World, on page 886, an article describing a ring spinning frame for coarse yarn. I would like to know the address of the builder. Millis (198).

The ring frame referred to by our correspondent is built by Elsassische Maschenenfabrik (formerly Andre Kochlin), Mulhausen, Germany, and was exhibited by this concern at the Paris Exposition last year.

Manufacturer Wanted.

Editor Textile World:

We are looking for some firm who can supply from seven to ten thousand yards of velveteen per day in three grades.

Sammett (192).

Answered by mail. We will put any interested parties in communication with this correspondent if desired.

Velvet Cutter.

Editor Textile World:

Where can I purchase a velvet cutting machine?

Schneider (192).

Velvet cutters can be obtained from the Velvet Cutting Co., 356 West Broadway, New York.

Numbering Silk.

Editor Textile World:

I would like to know how to convert deniers into drams in silk yarn? There seems to be much confusion in regard to this matter. I want a method that is absolutely correct, and would like to have the basis on which the calculations are found. In the silk business many superintendents calculate that 17-33/100 equal one dram. I am unable to find any basis for this ratio.

Schneller Holz (184).

In the October issue of the Textile World, on page 723, will be found an article which answers this question completely, explaining the origin of the denier method of numbering silk and also showing how to convert deniers into drams. The ratio between denier and dram numbers is 17.347. The New York Silk Conditioning House adopts 17.366 as the ratio between deniers and drams, and, owing to the weight of this authority, the slight error, amounting to only 1/914, is in many cases neglected. The rules given in the October article are as follows:

1. To find the yards per pound of any size of silk expressed in deniers divide 4.440.745 1/3 yards by the number of deniers.

2. To find the yards per pound of any size of silk expressed in drams, divide 256,000 by the number of drams.

3. To reduce deniers to drams divide the number of deniers by 17.366 (or 17.347).

Finishing and Glazing Cotton Yarns.

Editor Textile World:

Where can I secure information in regard to finishing and glazing cotton yarn?

Glanz (193).

This subject is treated very fully in "Die Appreturmittel," a German work by Friederick Polleyn, price $2.00. We can furnish it if desired.

Books on Cotton Manufacture.

Editor Textile World:

What books can you recommend on the subjects of cotton carding, spinning and preparation of warp for weaving?

Pratzen (183).

Nasmith's "Cotton Spinning," one volume, price $3.00; Taggarts' "Cotton Spinning," three volumes, volume I, $1.75, volume II, $1.75, volume III, $4.00. Volume I treats of the preparation of the material and the processes up to drawing; volume II takes the subject up at the process of drawing and carries it forward to the end of what is generally

termed as the preparing processes for spinning; volume III treats of the spinning process.

The preparation of the warp for the loom is not treated specially in any book that we know of, but chapters on this subject can be found in most works on weaving. We would recommend "Cotton Weaving," by Marsden, price $3.00.

The three volumes of Taggarts' work can be purchased separately if desired.

Average Count of Yarn.

Editor Textile World:

To settlt an argument please state the correct method of calculating the average yarn number in a mill with spindles and production as follows:

To settle an argument please state the
2,000 spindles 40,000 lbs. No. 10 yarn.
2,800 spindles 60,000 lbs. No. 30 yarn.
800 spindles 20,000 lbs. No. 40 yarn.

120,000

Durchschitt (186).

For all systems of yarn numbering based upon the number of hanks per lb., such as cotton, worsted, and woolen runs systems, the average number of yarn of different sizes is the average number of hanks per lb.

We will take the example cited by our correspondent for illustration. A mill has in a certain time produced 1200 lbs. of yarn as follows:

40,000 lbs. No. 10 yarn	400,000 hanks.
60,000 lbs. No. 30 yarn	1,800,000 hanks.
20,000 lbs. No. 40 yarn	800,000 hanks.
120,000	3,000,000

We find that there are 3,000,000 hanks in 120,000 lbs., or an average of 25 hanks per lb., which is the average count of the yarn.

The number of spindles in a mill is not a factor in the calculation; the pounds and counts of the different sizes of yarn are the only factors to be taken into consideration.

Saponification of Oils.

Editor Textile World:

In one of your questions and answers in a recent issue you mentioned something about the saponification of oils, and stated that a series of experiments have been conducted on this line under the auspices of the United States Government. Where are these experiments described? Oil (185).

The experiments referred to are described in the Oil Chemist's Hand-book by Hopkins, price $3.00, which we can furnish if desired.

Book of Weaves.

Editor Textile World:

Where can I get a book of chain patterns for shaft work? Weber (189).

Bindungs-Lexikon fur Schaftweberei, by F. Donat, price $2.00, contains 4100 weaves adapted for shaft looms. This work is published in Germany and we can furnish it if desired. It contains no reading matter, so that it is adapted for the use of those who do not read German.

Handling of Yarns.

Editor Textile World:

Where can I get information in regard to the handling of different kinds of yarns? Karde (196).

We judge that our correspondent desires to become familiar enough with the different kinds of yarn to handle them as a merchant, and that he wishes to secure enough practical information in regard to the manufacture of them to assist him in his business of merchant or salesman. The only way to get real serviceable knowledge of yarns is by actual experience in handling the goods. At the same time, the study of books in connection with such experience will prove of great assistance in acquiring this knowledge.

For woolen and worsted yarn we would recommend McLaren's "Spinning Woolen and Worsted," price $1.50; for cotton yarn we would recommend Nasmith's "The Student's Cotton Spinning," price $3.00

We do not know of any English book treating of silk yarn. There are a number of French and German books on this subject, which we can recommend if desired.

These books treat of the manufacture of the yarn. The appearance and handling can of course only be learnt by experience. Cole's "Dictionary of Dry Goods," in which all classes of dry goods are described, might prove to be well suited for our correspondent's needs.

Hangers for Drying Silk Goods.

Editor Textile World:

Will you kindly inform us of the name of some party who builds festoon or automatic hangers for drying silk goods after printing?

Festoon (190).

We believe that the hanging racks which are used for hanging and drying wall paper will answer the purpose of drying silk goods after printing. The Fairmount Machine Co., of Philadelphia, Pa., who build hanging racks for wall paper, could probably supply your needs.

Teasels.

Editor Textile World:
Is the teasel still used for napping cloth? If so, on what class of goods?
Teasel (197).

The teasel burr is still used for napping cloth. It has been supplanted to a great extent in this country at least, by the wire napper, but some finishers still use the teasel gig, particularly for face finished goods such as beavers and kerseys.

Teasels are still used for napping cloth to a large extent abroad, and the market of the American teasel grower today is found largely in foreign countries.

We have never heard of a wire teasel. We would not care to venture an opinion as to the merits of such a device. We have doubts as to its being successful.

New Publications.

Cotton Trade in England and on the Continent: by Dr. G. von Schulze-Gaevernitz: Translated from the German by Oscar S. Hall, M. I. Mech. E. (Bury). This work, which has been carefully written by a student of the industrial conditions in cotton mills in England and on the Continent, can be very profitably studied by our manufacturers, especially as they are looking forward to competing with English and Continental mills in the world's markets. It deals with the theoretical and practical views of the most eminent authorities of the past and present; the development of the factory system in the English cotton industry; the cotton industry under the influence of international competition; the present position of the English cotton industry compared with its position in the "thirties," and the present condition of the German cotton industry; the centralization and division of labor within the industry; the replacement of material and labor by capital in spinning and weaving; labor examined in various countries, and prominently in Lancashire; a comparison between the costs of production in England and Germany; the influence of the development of the factory system on the division of the nation's income; the social conditions of English and foreign operatives, with their annual budgets; the relations between employer and employed, along with the standpoints to be taken up by both.

The work can be obtained through this office. Price $1.75.

The Density of Warp for All Kinds of Fabrics: by N. Reiser; Georg D. W. Callwey, Muenchen; illus.; price $1.50. Much has been written upon the lay out or density of warp threads for different weaves and fabrics, and many methods of calculation have been proposed by which to ascertain the right density of warp for any particular texture. The rules laid down have, however, been of little if any practical use, and no successful manufacturer attempts to lay out his goods by the aid of these theoretical formulas.

This work by Nicolas Reiser, the well known professor in German textile schools and writer on textile subjects, treats the subject from a new standpoint. He adopts as his motto "Probiren geht vor Studiren." (Experiment precedes study.) He gives the result of a long series of experiments with different weaves and sizes of yarn, which were made to determine the resistance to the introduction of the filling which accompanies different combinations of weaves, sizes and densities of the warp. From the results of these experiments Mr. Reiser endeavors to deduce general principles.

The book is a valuable contribution to a subject which has heretofore been muddled by theory to the exclusion of practice. Its study will lead manufacturers to many methodical observations and records of the action of different fabrics in the loom, which cannot fail to be of value.

The text, which is well illustrated, is in German and the work can be imported through our office.

Dyeing Cotton Fabrics; by Franklin Beech; D. Van Nostrand Company, New York; price $3.00.

Cotton dyers will appreciate the work, on account of its being devoted exclusively to the dyeing of goods, which are wholly or partly composed of cotton. This specializing of a textile work greatly increases its value in the department of which it treats. The following is an outline of table of contents: Scouring and Bleaching of Cotton; Dyeing Materials and Manipulations; Principles and Processes of Cotton Dyeing; Dyeing Union Fabrics; Dyeing Half Silk Fabrics; Washing, Soaping and Drying; testing the Colors of Dyed Fabrics; Experimental Dyeing; Comparative Dye Testing.

Conditioning, Numbering and Discharging Silk; by Jules Persoz; G. Masson & Co., Paris; price $3.25.

This volume, containing 500 pages, treats, as its title indicates, of the conditioning of silk, and the various systems of numbering silk yarn, together with the discharging or preparing of the silk for coloring. The following abstract of the contents will give a more detailed idea of the ground covered: Historical Review; Physical Properties; Chemical Properties; Conditioning and Numbering Silk Yarn; Discharging and Bleaching; Conditioning and Numbering Woolen, Cotton, Linen and Other Yarns; Characteristics of Other Textile Fibres.

The subject is treated very extensively, and numerous illustrations accompany the reading matter. The work is in French and can be imported through this office.

The Control of Trusts; by John Bates Clark; The MacMillan Co.

This little work is composed mainly of articles which have appeared in the political Science Quarterly, Atlantic Monthly, and the Independent. Their aim is to present clearly, the views of the author on the difficult subject of industrial combinations. It is not a history of the trusts, nor is it confined to a description of any particular form which they are now taking, but gives the author's views as to the best methods of handling these combines. The view he takes is, that it will be better for the public

to handle the trusts than to allow the trusts to handle the public, and he assumes at the outset, that trusts in some form or other are inevitable, as they are the result of natural law, which cannot under any possibility be evaded.

The work will well repay reading and studying, and we believe it will have a good effect upon modifying extreme views in regard to industrial combinations.

The Theory of Shaft and Jacquard Weaving; Anton Gruner, A. Hartleben, Wien, Austria; Price $2.50.

This work, fresh from the press of this well known German publisher, is remarkable for the variety of the colored plates illustrating the text of the work. This feature makes the work valuable, even to readers who do not understand German. The plates in some cases have as many as five colors to illustrate clearly the manner of interlacing the warp and filling to produce special effects. The work is so well done that the illustrations speak for themselves, and teach the art of weaving with a clearness that cannot be equaled by any other method.

The work begins with a description of drawing in, heddle calculation, and making drafts for shaft weaving. The different varieties of weaves are then described. The list is too long for us to repeat, but it includes all the varieties of weaves known to the art, and includes various complicated weaves such as are used for carpet and upholstery stuffs, together with gauze weaving, plush, astrakhan, velvet, chenille, etc.

The text occupies fifty-six pages. The descriptions are boiled down to as small a space as possible. In addition to the text there are eighty-six colored plates. The work can be imported through this office.

Tarr & McMurray's Geography of New England. The MacMillan Co., New York.

This geography is designed for use during the closing years of the grammar school course. It handles the subject in the same general way as previous books of this series.

The communities of each State are considered collectively in the physiographic districts and groups to which they belong. A very clear idea of New England and its people is conveyed to the student.

Organic Dyestuffs; by Albert Berghoff; A. Hartleben, Wien, Austria; Price $2.75.

A new work issued by this well-known publisher. It belongs to his Chemical and Technical Library. The title gives a clear idea of the scope of the work, which treats of organic dyestuffs both of animal and vegetable origin. The following is an abstract of the table of contents: Divisions of Organic Dyestuffs; Dye Woods; Dye Extracts in Solid and Liquid Form; Dye Roots and Berries; Flowers and Leaves Yielding Dyes; Excrescences on Plants; Dye Preparations Obtained from the Vegetable Kingdom; Dye Preparations Obtained from the Animal Kingdom; Testing Dyes; The Use of Dyestuffs in Coloring and Printing; Textile Fibres; Mordants; Fixing Adjunct Dyeing; Dyeing with Madder; Useful tables.

The text is in German and the work can be imported through this office.

First Aid in Case of Accident; by Dr. J. Lamberg; Vienna, Austria. Price 50 cents. This is the title of a German book, which is also published in the form of a placard in which are found short, concise directions for aiding the injured in case of accident.

The value of early assistance is so great, that such works as these will prove of inestimable value. Many illustrations show clearly the manner of treating the patient.

This book and the placard, recently published in Vienna, have already met with a large sale in that country, and arrangements are being made to publish an English edition. The German edition can be imported through this office.

Animal Fibres; by Max Bottler; A. Hartleben, Wien, Austria; Price $1.75.

This is one of the works of the well-known Chemical and Technical Library published by A. Hartleben. The first section is devoted to the description of animal fibres; in the second, scouring and bleaching materials are treated; the third section is taken up with the dyeing of animal fabrics.

The author is a professor and director of the Chemical Experiment Station at Kissengen, and is well equipped to handle the subject.

The text is in German. The work can be imported through this office.

Textile Materials; by Jules Persoz; Masson & Cie, Paris; price $1.00.

A work of 184 pages. Following is an abstract of the table of contents: Machinery Employed for Preparing and Conditioning Silk, Wool, and Other Textile Materials, including Mixed Goods; Problems Connected with Conditioning; Tables for Calculating the Shrinkage of Silk and Wool; Discharging of Silk; Numbering of Silk, Cotton, Linen, Wool and Worsted Yarn; Determining the Sizes of Yarn in a Sample of Cloth; Tests of the Strength of Fabrics and Yarns. The work is in French, and can be imported through this office.

New Color Cards.

St. Denis Autogene Black; Sykes & Street, New York. This card contains four dyeings of St. Denis Autogene Black on raw cotton with 25-12-5-2-½ per cent. respectively. Full directions for handling the stock are given.

The shades are very clear and show the wide range that can be obtained with these dyestuffs.

—Immedial Sky Blue. W. J. Matheson & Co., Ltd., New York. An eight-page pamphlet describing the method of coloring cotton in either the raw or manufactured state with Immedial Sky Blue. A color card also accompanies this pamphlet in which a number of samples of yarn and cloth, dyed different shades with Immedial Sky Blue, are shown.

Benzodine Colors on Flannelette; Farbenfabriken of Elberfeld Co., New York. Fifty samples of flannelettes colored different shades with Benzodine colors. Full directions for dyeing are given.

The Textile World's Change of Address.

The publication and main offices of the Textile World have been removed to the modern new fire-proof building at 95 South Street, in the block between Essex and Tufts Streets. The map on another page shows the new location. Our new offices, while in the same vicinity and conveniently located, are free from the noise and dust of our former location, and in every way better suited for our present needs, having been especially arranged for our purposes. Our new telephone number is Oxford 1416. We hope to see our friends in our new quarters.

GUILD & LORD, Publishers,
Textile World.

Large Orders for Barber Knotters.

Messrs. B. B. & R. Knight, of Providence, have ordered of Barber & Colman, 11 Pemberton Square, Boston, 165 of their Barber Knotters. The Fall River Iron Works have received their last and final shipment of the Barber Knotters, and their plant is now equipped with same. The knotter has passed out of the stage of experimental use, and is now recognized as a necessary factor in the spooling department.

The Cotton Piece Goods Trade with Argentina.

The article which obtains the largest sale is unbleached calico, followed by bleached and printed calicoes. English goods are preferred for quality, but French prints are considered more tasteful in their designs.

Many of these articles are heavily starched, to give them an appearance of extra thickness, but this is of doubtful expediency, as it increases their weight, and consequently the duty payable on them (which is at a fixed rate per weight), while the presence of the starch is readily detected, and helps little (if at all) to increase the sale. A tasteful design, or colored picture, on the outside of each piece is found useful in affecting sales.

Agents should be plentifully supplied with books of samples for distribution among their sub-agents and travelers, such books to contain, in addition to the smaller samples pasted in them, at least one full-width sample of each set of designs. I refer specifically to

Printed Calicoes (Zaraza).—All kinds of this article find a large sale, though there is considerable foreign competition. Before the introduction of the decimal system it used to be the custom of retailers to buy the pieces at so much per metre (40 inches), and sell them at the same price per vara (34 inches). Though this practice no longer prevails, it will give an idea of the profit obtained, which it will be seen is not large.

Tweeds (Casimires) are imported principally from England and France. There is a good sale for all kinds, both of pure wool, and mixed with cotton, but the selection should be made by a practised hand.

A large firm, which recently commenced business in Buenos Ayres, had a stock of tweeds sent out which had been personally selected by one of the partners when in London; but, owing to want of experience, the selection was badly made, and a great part of the stock proved unsuitable to local requirements, and had to be sold at a sacrifice.

Serges (Sargas).—The foregoing remarks will also apply to this line, which is not in so much demand, except for the ready-made trade.

Drills (Azargado) are in good demand; and nearly all are of English manufacture.

Unbleached Calico (Lienzo).—Pieces generally come from England in lengths of 20 yards (18.30 metres), but some foreign manufacturers send lengths of 20 metres, which is more convenient for local use. Some pieces are marked by a number, and others by a special artistic brand on the outside; the latter are more salable, for the reason that the country people (the principal purchasers of unbleached calicoes) are, in a great measure, illiterate, and a large brand (such as a horse's head) is more readily distinguished and recognized than a number.

Bleached Calico (Bramante Lavado).—The foregoing remarks will also apply, in the main, to this textile. The profit to retailers is somewhat more than on unbleached calico, but in the country districts the former has a much larger sale, the reverse being the case in the larger towns. Certain favorite brands have a very large sale; while new brands have to be actively pushed to find an opening. —British Trade Journal.

Dust Collecting Systems.

It is a well known fact that dust from pickers and other cotton manufacturing machines is a very difficult material to dispose of. Having had many years of practical experience at this class of work, the Sterling Blower & Pipe Mfg. Co., 44 Huyshope Ave., Hartford, Conn. (New York, Boston and Norfolk, Va., offices), is in a position to give proper attention to parties who are in need of a dust collecting apparatus. In the mills of the Byron Weston Co., at Dalton, Mass., a system for collecting the dust from picking machines is in successful operation, and is spoken of very highly by its owners. It is well to bear in mind, in taking up the matter of dust collecting, that the Sterling company guarantee their work. If the promised results are not secured, no payment is required.

Gold Medal for Watches and Clocks.

The E. Howard Clock Company, of Boston and New York, was awarded a gold medal at the Pan-American Exposition. This is the only concern in the United States manufacturing watches and clocks which received the highest award, and it speaks well for the quality of their goods.

Hosiery Boards.

Attention is called to the announcement of the Wisconsin Manufacturing Co., of Two Rivers, Wis., who advertise superior hosiery boards. They are located in a district where suitable raw material is at hand, and their facilities for manufacturing are most excellent. They invite manufacturers to send for their price list.

The Down Draft Forge.

A number of years ago the Buffalo Forge Company installed for the Big Four Route, i. e., the Cleveland, Cincinnati, Chicago & St. Louis Ry., a down draft forge shop equipment in their shops at Wabash, Ind. Recently Mr. Wm. Garstang, Superintendent of motive power, at Indianapolis, addressed the following letter to the Buffalo Forge Company:

"Enclosed copy of letter is self-explaining and is forwarded for your information. Wm. Garstang, Supt. Motive Power."

The enclosure was a copy of his letter to the Embree McLean Carriage Co., St. Louis, Mo., as follows:

"Your favor of the 4th, addressed to this company at Wabash, has been referred by our master mechanic to the undersigned to answer direct.

"Our Wabash shop is equipped with the Buffalo Forge Company's down draft forges, and have been in service now for several years. I consider them a success, and especially so in so far as keeping the shop free from smoke and gas is concerned.

"For the class of work that I imagine is done in a carriage shop, I don't believe there is any forge better adapted for this service than the one in question.

"If you are in the neighborhood of Wabash, Ind., at any time I would be glad to have you call in and see how the forges in our shop are performing."

The Philadelphia Textile School.

The new school year at the Philadelphia Textile School is now in full swing, and it is not too much to say it is the banner year in the history of the School of Industrial Art. The most marked feature of this session is the popularity of the evening classes.

The limit of accommodations has been reached in almost every class. Every locker and desk in the institution has been utilized, and this notwithstanding the increased facilities provided during the past summer. This condition of affairs has never happened before, and means that largely increased accommodations must be provided next year for the growing need of this form of education in the industrial arts.

Another marked feature of the attendance of this session is the number of students who are graduates of the leading colleges in this country. There have always been, in the various classes, graduates from some of the colleges of higher education, until today it can be truthfully said that at some time or other the School of Industrial Art has numbered among its students graduates of almost every college in this country, large and small.

The National Association of Woolen and Worsted Overseers.

This association held its nineteenth meeting at the United States Hotel, Boston, Mass., on Nov. 23d. The meeting was called to order by President T. F. Brennan.

After the reading of the minutes of the last meeting and the approval of bills the following officers were elected: Chas. M. Hurst, Providence, R. I., president; M. C. O'Brien, New Bedford, Mass., vice-president; T. H. Biddles, Potter Hill, R. I., second vice-president; S. Walker, Uxbridge, Mass., third vice-president; Walter Pickford, Leominster, Mass., secretary; A. E. Jones, Uxbridge, Mass., treasurer.

George W. Burr, of Ludlow, Vt., was elected secretary of the beneficiary department, and the following trustees were elected: John Thornton, Wood, Mass., and Eleazer Davis, of Plymouth, Mass.

Following is a list of the new members elected: Alexander L. Stewart, dyer, Hyde Park, Mass.; Richard D. Twohig, Jr., carder, East Douglas, Mass.; Thos. Park, superintendent, East Swanzey, N. H.; Arthur W. Gibson, carder, Proctorville, Vt.; Murray E. Schnyer, dyer, Proctorsville, Vt.; Charles Edward Johnson, carder, Ludlow, Vt.; Charles H. Drabble, spinning, Killingly, Conn.; Daniel C. Fisher, carder; D. E. Jenkinson, weaver, Ludlow, Vt.; L. H. Corey, spinner, Ludlow, Vt.; Hugh B. Frazer, finisher, Rochdale, Mass.; Geo. H. Thomas, carder, Centreville, R. I.; Thos. F. Cusick, carder, Moosup, Conn.; B. H. Duffy, carder, Leominster, Mass.; Jas. H. Foss, weaver, Franklin, Mass.; T. St. George, carder, Springfield, Mass.; Edward H. James, carder, Munson, Mass.; Samuel Tice, carder, Lowell, Mass.; Frederick Grenthen, carder, Fitchburg, Mass.; Edward Lynch, carder, Spencer, Mass.; Wm. L. Nason, finisher, Ludlow, Vt.; Geo. P. Levy, superintendent, Ludlow, Vt.; Jas. Ray, carder, Cherry Valley, Mass.; James H. Hendry, superintendent, Dexter, Me.; A. Elmer Langdon, weaver, Somerville, Conn.; Andrew Dragon, carder, Worcester, Mass.; Jonathan Lockwood, carder, Trenton, N. J.; Patrick Doherty, carder, Cherry Valley, Mass.; Benj. Horsfall, dyer, South Windham, Me.; Henry Maloney, carder, Meriden, Conn.; Gustave Logan, weaver, New London, Conn.; Hartley Brammont, superintendent, Dalton, Mass.; Jas. Hale, carder, Maynard, Mass.; John Scott, carder, Little Falls, N. J.; John Ainstrom, carder, Marcellus, N. Y.

The following were elected honorary members: Thos. J. Sullivan, 200 Summer Street, Boston, Mass.; Sigmond Sax, New York; L. C. Farnsworth, Providence, R. I.; John T. Miskell, 170 Summer Street, Boston, Mass.

A large number were in attendance and the meeting proved to be a very enjoyable and profitable occasion to all.

Following is a list of those present: Thos. Pendergast, Webster, Mass.; P. F. Hanlin, East Douglas, Mass.; Geo. A. Elliott, E. Rochester, N. H.; M. C. O'Brien, New Bedford, Mass.; Wm. H. Batty, Philadelphia, Pa.; T. St. George, Hartford, Conn.; W. V. Philbrick, Worcester, Mass.; Theo. Pavent, Rochdale, Mass.; C. H. Eddy, Westerly, R. I.; C. N. Clark, Westerly, R. I.; H. W. Fitzroy, Rochdale, Mass.; Mark Tempest, Byfield, Mass.; Wm. Taylor, Byfield, Mass.; E. P. Sweeney, Keene, N. H.; John F. Leonard, Dexter, Me.; Simon Taylor, Spencer, Mass.; Eleazer Davis, Plymouth, Mass.; T. J. Entwistle, Monson, Mass.; Fred. Dixon, Boston, Mass.; J. D. Price, Methuen, Mass.; E. Saxe, Boston, Mass.; J. H. Pickford, Leominster, Mass.; Thomas Richmond, Killingly, Conn.; J. W. Linnehan, Boston, Mass.; John J. Henderson, Cordaville; Richard

D. Turbrig, Jr., East Douglas, Mass.; Walter Pickford, Leominster, Mass.; C. M. Hurst, Providence, R. I.; Albert E. Jones, Uxbridge, Mass.; P. F. Sheridan, Lowell, Mass.; A. L. Stewart, Hyde Park, Mass.; H. C. Stevens, Hyde Park, Mass.; Jas. P. Kennedy, Millbury, Mass.; Wm. E. Davison, Uxbridge, Mass.; Ulick Barker, Saxonville, Mass.; Thomas Buchan, Hyde Park, Mass.; S. Walker, Uxbridge, Mass.; T. W. Biddles, Westerly, R. I.; Geo. W. Burr, Ludlow, Vt.; L. C. Farnsworth, Providence, R. I.; Thos. J. Sullivan, Boston, Mass.; G. W. Gerry, Maynard, Mass.; Thos. Ambach, Lymansville, R. I.; C. M. Ellis, Putnam, Conn.; Andrew Smith, Kenyon, R. I.; John D. Meskell, Boston, Mass.; Jas. B. Jones, Philadelphia, Pa.; J. T. McCormack, Hyde Park, Mass.; W. B. Sisson, Worcester, Mass.; P. O'Donahoe, Methuen; John Thornton, Glendale, R. I.; Archibald Ormiston, Clinton, Mass.

American Cotton Yarn Exchange.

The American Cotton Yarn Exchange, of which Arnold B. Sanford is president, recently announced that it has completed arrangements with the well-known commission house of James Talcott, so largely identified with cotton, woolen and knit goods industry, for the financing of the sales of mills selling their product through this agency. Their New York office will henceforth be at 108 Franklin St., with James Talcott. This connection will be extremely advantageous, giving ample capital and enabling them to increase their facilities to the full extent of their requirements and to handle all the desirable accounts of mills who may desire them to act as their selling agents.

Pepper Machine Works.

By the recent death of the late W. H. Pepper, Mr. G. A. Sanders becomes proprietor of the business, which will henceforth be conducted under the name of the Pepper Machine Works, succeeding the Pepper Manufacturing Co. Mr. Sanders has long been identified with the business, and, indeed, for a number of years past has been its manager, so that the slight change in name is in reality no change of policy or management. The business will be conducted in the same way which has given the Pepper machinery such a high standing in the trade.

Raw Hide Gears.

The New Process Raw Hide Co., Syracuse, N. Y., has received through its English agents, Geo. Angus & Co., during the month of October, trial orders for its New Process Noiseless Pinions from no less than eleven of the leading electric railway companies in Great Britain. These trial orders will doubtless lead to a considerable trade in the near future. The company report its trade in the general machinery line as steadily increasing, especially in the case of motor-driven machine tools where noiselessness is very essential. Since the company's announcement a couple of months ago that it is in position to furnish accurately cut metal gears also, the number of orders received for work in this line has been very gratifying and point favorably to an extended trade.

Meeting of the Angora Goat Breeders' Association.

The second annual meeting of this association was held October 24th in the Exchange Hall, Kansas City.

The first address was delivered by Col. W. L. Black, Fort McKavett, Tex. He was followed by other speakers among others being W. G. Hoerle of New York, Dr. G. R. Standley, Platteville, Ia.; W. M. Lindrum, Laguan, Tex.; Dr. W. C. Bailey, San Jose, Cal.; Geo. F. Thompson representing the Department of Agriculture, and Dr. E. R. Allen, Kansas City.

The annual sale of angora goats commenced on Friday, October 25th, and proved very successful. At the banquet of the association, the members present showed their faith in the goat by the extent to which angora goat meat formed a bill of fare.

Notes Among Western Mills.

Since my last letter I have called on the Seymour Woolen Co., Seymour, Ind., and found them busy filling orders booked some time ago. The New Albany Hosiery Mills and the New Albany Woolen Mills Co., New Albany, Ind., are both doing a good business, and the proprietors are well pleased with the outlook. At Louisville, Ky., the Mayfield Woolen Mills Co., are crowding their mill for all they are worth. The Beargrass Woolen Mills have all the business they can take care of.

After leaving Louisville, I visited the Clermont Woolen Mills, New Richmond, Ohio. This concern has six sets of cards and 4000 spindles on which they make various grades of yarn. I next called at the mills at St. Mary's, O. The St. Mary's Woolen Manufacturing Co., and the Bakhaus & Kuensel Co., at New Bremen; these are both blanket mills, and their production has an enviable reputation in the market. The Urbana Woolen Mills have all the business they can attend to, and they have orders that will keep the machinery busy until January 1st, 1902. The proprietors are well satisfied both with last year's business and the prospects for the coming year. At Columbus, O., the Columbus Woolen Mills Co. are making extensive improvements in machinery. They have recently secured a new superintendent, B. C. Ashdown, who came from Piqua, O.

At Dresden, O., there are three woolen mills, two on woven goods, and one on knit goods. All are busy. The Muskingum Valley Woolen Mfg. Co. are busy on orders. Geo. W. Hurst is superintendent. The Dresden Woolen Mills run entirely on ladies' skirts, flannels, and blankets of which they have a high reputation. Kapner Bros. & Duga Hosiery Co., are very busy. John H. Miller is manager and buyer at this place.

F.

—The Burt Mfg. Co., of Akron, Ohio, announce government orders for their well known Cross Oil Filters for the battleship "Illinois" and the torpedo boat "Bainbridge."

American Aniline Colors.

The well known firm of Schoellkopf, Hartford & Hanna Co. received a gold medal at the Pan-American Exposition at Buffalo for their Buffalo aniline colors, coal tar products and preparations. The factory at Buffalo is the largest of its kind in America, and, owing to the increased consumption for American aniline colors, has recently been greatly enlarged. The firm, whose head office is at Buffalo, has branches at New York, Boston, Philadelphia, Chicago, Milwaukee, Providence, Cincinnati, etc.

—The Amory Mills, Manchester, have placed a contract with the Green Fuel Economizer Company, through their Boston representative, Mr. H. G. Brinckerhoff, for the immediate delivery of one of their well known machines, to be installed at their Langdon boiler house. This order was placed on account of the success of their previous purchase for the Amory boiler house two years ago. Mr. Brinckerhoff expects to have the new economizer in operation at the Langdon mill before Christmas, so that they will have the benefit of its saving on their winter coal consumption.

News from Lowell.

Lowell is on the move, and nearly all the mills are running. The Tremont and Suffolk came near having a big fire in their storehouse. The fire broke out on Saturday night in the wooden storehouse, which extends from Tilden Street to Tremont; the loss will reach several thousand dollars. The blaze was in a mass of baled cotton waste; it is thought it was caused by spontaneous combustion. The prompt work of the fire department was all that prevented a great loss. The fire was discovered by Patrick Keegan, the champion bicycle rider, who rang in an alarm about 6.30 p. m., but it was not until 11.30 p. m., that the recall was sounded. When the firemen arrived, they found the flames breaking through on the side, and for a time it looked as if the building and contents were doomed. The capacity of the storehouse was 5000 bales, but the building was not full; there were some 2000 or more bales of cotton waste and from 800 to 1000 bales of cotton. There were some 700 bales in the end that were burnt by the fire. The loss is covered by insurance.

George Lonsdale, late second hand on the Massachusetts has resigned. The Hamilton Co., have their new water wheel nearly ready for use. It has been a long job. Mr. Holt, late overseer of weaving for the Appleton Co., has resigned.

Recording Pressure Gauges.

The Bristol Company, Waterbury, Conn., have issued a catalogue of their numerous vacuum and pressure gauges, adapted to pressures of all degrees used for industrial purposes.

These gauges make a continuous record day and night of steam, water, gas, oil or air pressure. The record shows at a glance whether the boiler has received the attention upon which largely depends its safety and economy.

The simplicity of the Bristol gauge is a noteworthy feature. The tendency of the pressure is to straighten or uncoil a tube, which causes the pen arm to move over the range of the chart without the necessity of any intervening or complicated multiplying devices. The pen arm is directly attached to the free end of the tube.

The chart makes one revolution every twenty-four hours, and is graduated with arcs and concentric circles. The divisions on the arcs correspond to the different pressures, while those on the concentric circles correspond to the hours of the day.

If desired, gauges can be furnished with charts making one revolution in fifteen minutes, one hour, six hours, twelve hours or one week. The instrument may be placed in the office or engine room at any desired distance from the boiler or vessel of which the pressure is to be recorded. The circular relating to these gauges gives full information as to dimensions, prices, etc. Illustrations are also shown of both the gauges and the dials. Thousands of these gauges are in operation in all parts of the world, and are now recognized as a standard instrument, owing to their simplicity, accuracy and reliability.

Following are two letters taken from a large number written by users of the Bristol gauges.

Waterbury, Conn., Jan. 11, 1893.

The Bristol Company, 121 Liberty St., N. Y. City.

Gentlemen:—In response to your favor of the 6th inst., would say that we have used a Bristol's Recording Gauge for over two years, and have always found it accurate and reliable. The price of the gauge is such that it should bring it within the reach of every one.

Yours truly,
Benedict & Burnham Mfg. Co.

Meriden, Conn., Jan. 10, 1893.

The Bristol Company.

Gentlemen:—Replying to yours of January 6th, we are happy to add our testimony to the usefulness of your Recording Pressure Gauge. We find it very useful, easily taken care of, and an excellent watchman upon our night-watchman, as we can tell the next day very readily whether our steam pressure has been kept even, as required, or not.

Yours truly,
Edward Miller & Co.

The Bristol Company, Waterbury, Conn., will be pleased to mail a copy of this circular to any interested parties upon application.

Dividend and Quotation Record.

The "New York Commercial" has shown enterprise in publishing a list of the railroads and industrial companies, showing their dividend records for the past ten years, capital stock, date of annual meeting, locating transfer offices, etc.

This publication is in the form of a folder adapted for hanging on the wall, and will prove a useful addition to all business and brokerage offices.

Prizes for Textile Improvements.

La Societe Industrielle de Mulhause has recently issued a list of the essays and improvements of textile processes for which prizes are offered by this society during the coming year.

An inspection of the list will be interesting, as it gives an idea of the departments of the mill, which the members of this society consider to be most in need of improvement:

1. A practical treatise on the working of carded or combed cotton, and also of waste, describing all the requisite machinery.

2. A treatise on the spinning of worsted in gray or colors on the best modern systems, and explaining the most suitable machinery.

3. A work on the twisting of cotton and wool by the most up-to-date methods.

4. An essay on the power necessary to drive each machine in a cotton or worsted spinning mill.

5. A new machine, or series of machines, for preparing all kinds of long-stapled cotton, silk or wool for combing, these machines to have features which will give them an advantage over those used in present practice, and which will present the fibres to the comb in a thoroughly cleaned condition.

6. A new machine, or series of machines, for cleaning all kinds of short cotton or silk and preparing them for carding.

7. A spinning frame which will produce cotton wefts of from 4is to 72s counts, equal in every respect to mule yarns.

8. A practical installation which will enable the atmosphere of spinning rooms to be maintained with a saturation of 80 per cent., to lower the temperature to 22° C. in hot weather, and renew the air in a manner that will respond to the modern ideas of hygiene, without a draught being noticeable.

9. The introduction of a positive under-motion for jacquards to be placed under or below the loom, or in the jacquard itself, which will not only be suitable for small designs, but will be as applicable for floral and other large effects and not in any way reduce the speed of the loom.

10. A machine for drawing-in and slaying warps which can be temporarily and easily affixed to any loom, either jacquard or otherwise, and which can be set to draw in warps ranging from 100 ends per inch downwards.

11. Improvements in drying, steam admission, and similar minor departments.

12. Essay on the theory and manufacture of alizarin reds by a rapid process employing drugs which will make them readily soluble.

13. On the theory and manufacture of cochenille carmine of a superior quality.

14. On cotton coloring matters and their relation to the mordant in gray or partially bleached goods.

15. The different compositions of aniline blacks; the physical and chemical changes taking place in the transformation of cotton into cellulose.

16. The chemical changes which wool undergoes when under the influence of hypochlorites, chlorine, and the oxygen compounds.

17. The constitution of one of the coloring matters used for printing calico whose composition has not yet been studied.

18. Solutions containing metals which leave their bases on textile fibres, and the conditions under which mordants and dyes give the best results.

19. On iron mordants and the part they play in dyeing followed by oxidation and hydration.

20. The production, by synthesis, of cochenille coloring matters.

21. A new means of manufacturing by synthesis some natural coloring matter largely used in the textile industry.

22. A theory of the formation of some natural organic substance which is largely used by synthesis.

23. The introduction of some metal, not usually employed, in a useful form for dyeing or mordanting.

24. An aniline or other black of the same solidity which does not weaken the cloth, and which will take printed colors (especially albumen prints) without affecting their shade.

25. A black soluble in any vehicle which when used for dyeing resists the action of light and soaping as effectually as aniline black.

26. A pleasing blue of low cost which will be qualified for blue-tinting wool goods and will resist the action of steam and light.

27. A blue dyestuff of the same shade and solidity as ultramarine, which may be chemically fixed on cotton without the aid of albumen or other thickening matter.

28. A full yellow dye going on the fibre like an alizarin, and possessing similar properties.

29. A tannin red as vivid as alizarin red, composed of a material which after a passage through emetic, is capable of withstanding soaping.

30. A purple, dyeing cotton either with tannin or a mordant, and possessing the properties of aniline red when dyed on wool.

31. The introduction of a coloring matter capable of replacing logwood in its different applications and having the same stability and solidity of shade.

32. A reserve adapted for steam colors on wool, which will easily wash off, and is accompanied by something different to tinsalts, hydrosulphite, the sulphites or bisulphites.

33. A new method of fixing aniline colors.

34. A means of enabling immediate colors to resist soap boiling and the prolonged action of water.

35. Metallic printing powders having the brightness of gold or silver and resisting scouring and steaming.

36. An indelible ink for marking gray pieces, which will not run, stain, or disappear in the subsequent bleaching, dyeing or printing processes.

37. A reliable method of obliterating stains made by mineral oil.

38. An improvement on the present methods of bleaching wool or silk.

39. An alloy or other substance with which to make the scrapers of printing rollers, which unites the elasticity and durability of steel with the property of being unaffected by chemical action when acid colors or metallic salts are being used.

A New Process for Printing Cotton with the Aid of Dyestuffs Containing Sulphur.

This process has been recently patented in England.

The commercial dye is boiled with zinc-dust and soda lye. By means of this operation on the one hand the dyestuff is reduced, on the other hand the sulphuretted compounds are transformed into insoluble zinc sulphide, which can easily be removed from the paste by pressing the same through a cotton cloth, or the like. If, instead of zinc, glucose, or other suitable reducing agent, which contains no metal, is employed, it is necessary to add a suitable metallic salt, such as sulphate of copper or pyrolignate of iron, in order to precipitate the inorganic sulphuretted compounds.

The pastes which are prepared in this manner, do not, in the least, attack the printing rollers.

After printing, it is advisable to steam the fabric for a short time in order to fix the dyestuff completely on the fibre. By these means level, fast, and brilliant shades are obtained. According to this process, for instance, the shades obtained from Katigen-black, Immedial-black, or the like, will rival, in every respect, the best shades produced by means of aniline-black.

By the addition of a small quantity of glucose the stability of the pastes is very much increased.

Example A.—Boil a mixture of
15grms. Katigen-black SW.,
20grms. Water,
10grms. Zinc-dust, and
18grms. Caustic Soda Lye (40°Bé.),
for about from two to three minutes until the reduction is completed, which can be determined by the fact that the original dark-blue color of the liquid turns greenish-yellow. Subsequently add 35grms. of tragacanth thickening (65:1000) and 2grms. of glucose (in order to increase the stability of the paste).

After cooling, the reaction mass is pressed through a cotton cloth, and the paste is ready for printing. The printed fabric is dried, steamed for ten minutes without pressure, rinsed, and soaped.

In this manner a good fast black is produced.

Example B.—Boil a mixture of
5grms. Katigen-olive,
31grms. Water,
14grms. Glucose, and
18grms. Caustic Soda Lye (48°Bé.),
until a change of the color takes place.

The reaction mass is then mixed with 30grms. of tragacanth thickening (65:1000), and afterwards at a temperature of from 25 to 30° Centigrade with
2grms. Pyrolignate of Iron.
The further treatment of the paste is effected as is described in Example A.

A brilliant fast olive color is thus obtained.

Whittier Mills' Additions.

The Whittier Mills, whose selling office is at Springfield, Mass., and mills at Chattahoochee, Ga., have recently completed extensive additions to their plant, largely increasing their facilities for coloring yarn. They are now prepared to color 25,000 lbs. of yarn daily, and have also complete facilities for glazing yarns. Their line now embraces cotton warps, either in gray, bleached or colored on beams, both single and ply; glazed yarns all plies or any color for braiders, also harness and sewing threads. They have long made a specialty of fire hose cords from long staple cotton, 6s to 20s yarn in 2 to 100 ply, 16 lbs. without a knot. They employ the Universal wind, 2 inch to 12 inch traverse. They invite special attention at the present time to their dyeing facilities. The mills in Chattahoochee are of modern construction, and everything is planned to turn out a large product at a minimum cost.

Arabol Mfg. Co.

Amongst the new finishing compounds lately brought out by the Arabol Mfg. Co., No. 155 William St., New York City, there are some for the use on bleaches, dye and print work and cotton piece goods. Manufacturers who have given them a thorough test are much pleased with them and give testimony showing that the new product maintains their well established reputation.

The attention of the trade is called to the fact, that besides starches of all kinds of their own manufacture, they handle China Clay, Talcum, Dextrines, Chloride of Magnesium and imported Potato Starch.

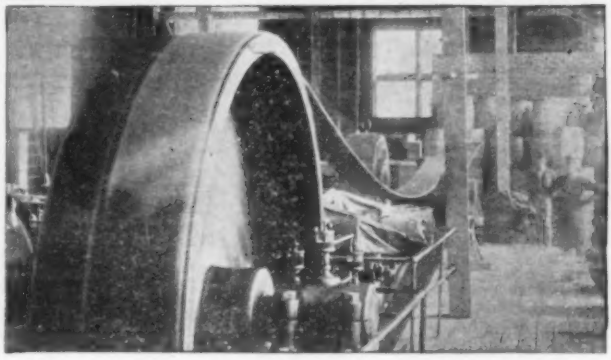
—The Geo. H. Gilbert Mfg. Co., Ware, Mass., have made an extension of their system of humidifiers recently installed by the American Moistening Company, Boston, Mass.

—The Hathawat Mfg. Company, New Bedford, Mass., has placed a repeat order for humidifiers with the American Moistening Company, Boston, Mass.

—Rapid progress is being made in the extensive improvements under way in the Apponaug property recently acquired by Mr. William Wanton Dunnell, and when completed it will be modern and up-to-date in every detail of the business. In the steam plant an important feature will be the Green Economizer. Mr. Dunnell having had a long experience with this apparatus naturally appreciates its value.

—Jenkins Brothers, New York, have been awarded at the Pan-American Exposition, a gold medal for Jenkins Brothers' Valves, a gold medal for Jenkins Brothers' '96 Packing, and two silver medals for rubber specialties.

Dry Kilns; B. F. Sturtevant Co., Boston, Mass. This is a circular of 86 pages, containing illustrations, descriptions, and price list of the various forms of dry kilns, and drying apparatus manufactured by the well-known firm of B. F. Sturtevant Co.



First Belt Run at the Pan-American

This was an old belt bought second-hand to use for a year or so until the new belts were received at the opening time.

It was dirty, full of oil and on its last run. They had to keep it tight and even then it slipped.

We took hold of it, cleaned it off and gradually filled it with Cling-Surface.

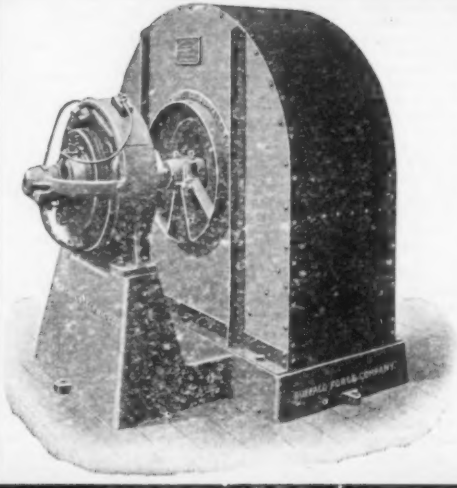
It had run about 8 months when this photo was taken. Was then pliable, clean, free from oil which the Cling-Surface had driven out, was transmitting 180 H. P. easily and running slack.

Cling-Surface made a good belt of it again.
We can do this for you—new or old belts.
Order Cling Surface and try it.

CLING-SURFACE MFG. CO., 199-205 Virginia St., Buffalo, N. Y.

BOSTON, 170 Summer St. NEW YORK, 38-41 Cortlandt St, PHILADELPHIA, The Bourse.

Buffalo Forge Company Buffalo



Buffalo
Steel Plate Fans
Steam,
Pulley, Electric,
FOR
Heating,
Ventilating, Drying,
Mechanical
Draft, etc.

Buffalo Forge Company Buffalo

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American Moistening Co., 150 Devonshire St., Boston.
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Lockwood Greene & Co., 93 Federal St., Boston, Mass.
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Artificial Stone.
Warren Bros. Co., 143 Federal St., Boston.
Asphalting & Asphalt Materials.
Warren Bros. Co., 143 Federal St., Boston.
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Warren Bros. Co. 143 Federal St., Boston
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Main Belting Co, 1219 Carpenter St, Phila.
Stephenson Mfg. Co., Albany, N. Y.
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Bristol Co., Waterbury, Ct.
Thatcher Belting Hook Co., Cleveland, O.
Belt Lacing Machine.
Diamond Drill & Machine Co., Walnut St, Birdsboro, Pa.
Bindings
See Tapes and Braids
Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co, 100 William St, New York.
Block Cutting for Printing.
Atlas Copper Stamp Works, 15 Whitehall St., New York.
Blowers, and Blower Systems.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshone St, Hartford, Conn.
Sturtevant, B. F. Co., Boston, Mass.
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Murray, C. O., Nashua, N. H
Southern Bobbin Co., Greensboro, N C.
Sweet & Doyle Cohoes, N. Y.
Tebbets, E. L., & Co., Locke's Mill Me
Boilers.
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Boxes, Cloth Boards, Etc.
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Wisconsin Mfg. Co., Two Rivers, Wis.
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Brushes.
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Jacobus, A. G. Verona, N. J.
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Brushers
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Burr Pickers.
Atlas Foundry & Mch. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester Mass.
Sargent's, C. G Sons Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass
Butterworth, H. W., Sons & Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Phillips Co, The Thomas, Providence, R I.
Taunton New Bedford Copper Co., New Bedford, Mass.
Rusden Machine Co., Warren, R. I.
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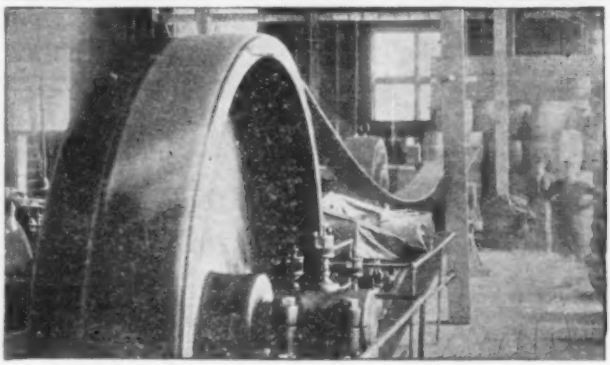
Carbonizing Machinery.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts, Phila.
Smith, Jas. Woolen Machinery Co., Phila.
Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Edma Card Clothing Co 412 S. 5th St, Camden, N. J.
Leigh, Evan A, 35 Mason Building, Boston
Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.
Smith, Jas Woolen Machinery Co., Phila.
Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.
Carpet Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Curtis & Marble Machine Co, Worcester, Ms.
Furbush M. A. & Son, Machine Co, Phila, Pa.
Granger Foundry & Machine Co., Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.
Cement "Dealers."
Warren Bros. Co., 143 Federal St., Boston.
Chemicals and Apparatus.
Fiedt, Geo. D. & Co, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.
Cigars.
Taylor & Stinson, 482 Boorse, Phila, Pa.



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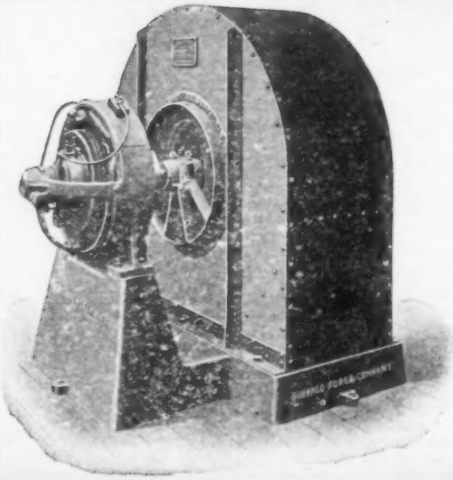

Buffalo
Steel Plate Fans
Steam,
Pulley, Electric,
FOR
Heating,
Ventilating, Drying,
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See Tapes and Braids
Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co. 100 William St, New York.
Block Cutting for Printing.
Atlas Copper Stamp Works, 15 Whitehall St., New York.
Blowers, and Blower Systems.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshone St, Hartford, Conn.
Sturtevant, B. F. Co., Boston, Mass.
Bobbins, Spools, Shuttles, Etc.
McGuire, John A., Co, Claremont, N. H.
Murray, C. O., Nashua, N. H
Southern Bobbin Co., Greensboro, N. C.
Sweet & Doyle, Cohoes, N. Y.
Tebbets, E. L., & Co., Locke's Mill Me
Boilers.
See Steam Boilers.
Boxes, Cloth Boards, Etc.
Pearson, J. T, Kensington, Pa.
Wisconsin Mfg. Co., Two Rivers, Wis.
Boxes Paper.
See Paper Boxes.
Braiding Machinery.
New England Butt Co. Providence, R. I
Textile Machine Works, Reading, Pa.
Braids.
See Tapes, Braids and Edgings.
Brass Perforated.
See under Perforated Metal.
Brushes.
Felton, S. A. & Son Co., Manchester, N. H.
Jacobus, A. G. Verona, N. J.
Parks & Woolson Mach. Co., Springfield, Vt.
Brushers
See Napping Machines.
Burr Pickers.
Atlas Foundry & Mch. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester, Mass.
Sargent's, C. G Sons Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co., New Bedford, Mass.
Rusden Machine Co., Warren, R. I.
See also Dyeing, Bleaching Machinery, etc
Canvas Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.
Carbonizing Machinery.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.
Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Edma Card Clothing Co 412 S. 5th St, Camden, N. J.
Leigh, Evan A, 35 Mason Building, Boston
Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.
Smith, Jas. Woolen Machinery Co., Phila.
Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.
Carpet Machinery.
Altemus, W. W. & Son, 2816 N. 4th St, Phila, Pa.
Curtis & Marble Machine Co, Worcester, Ms.
Furbush M. A. & Son, Machine Co, Phila, Pa.
Granger Foundry & Machine Co., Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.
Cement "Dealers."
Warren Bros. Co., 143 Federal St., Boston.
Chemicals and Apparatus.
Field, Geo. D. & Co, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.
Cigars.
Taylor & Stinson, 482 Bourse, Phila, Pa.

Cling Surface.
Cling Surface Mfg. Co., Buffalo, N. Y.
Clocks.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden—Lane, New York.
Prentiss Clock Imp. Co, 49 Dey St, N. Y.
Clutches.
American Tool & Machine Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co,, The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.
Smith, Jas. Woolen Machinery Co.. Phila.
Smith, T. H., Cotton Mill, Jamestown, N.Y.
Combs (Wool and Cotton).
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.
Commission Merchants (Dry Goods, Knit Goods).
Charleston Export & Commission Co., Charleston, S. C.
Doane, Thomas H., 233 Monroe St., Chicago, Ill.
Concrete.
Warren Bros. Co., 143 Federal St , Boston.
Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
Link Belt Machines Co., Chicago, Ill.
The Sterling Blower & Pipe Mfg. Co., Hartford, Conn.
Cop Tubes.
See Paper Tubes.
Copper Gaskets.
U. S. Mineral Wool Co., 149 Liberty St., New York.
Copper (Perforated.)
See under Perforated Metal.
Copper Print Rollers.
Phillips Co, The Thomas, Providence, R. I.
Taunton-New Bedford Copper Co , New Bedford, Mass.
Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co , Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.
Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Link Belt Machinery Co., Chicago Ill.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Cotton Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Ashworth, Elijah, Fall River, Mass.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Barber & Colman, 11 Pemberton Sq., Boston.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Houghton, L. T. & Sons, Worcester, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowe, Stephen C., 186 Devonshire St., Boston, Agt. John Hetherington & Sons, Ltd.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G , Boston, Mass.
Parks & Woolson Mach. Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Wks, Whitinsville, Mass.
Cotton Openers and Lappers.
Atherton, A. T., Machine Co., Pawtucket R. I.
Kitson Machine Co , Lowell, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Cotton Softeners.
Bosson & Lane, Boston, Mass.
Cotton Waste.
Charles, W. B., Amsterdam, N. Y.
Credits.
National Mercantile Agency, New York and Boston.
Cutters for Knit Fabrics.
Goodwin, J. C., Diamond and Second Sts., Phila., Pa.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.
Dextrine.
Stein, Hirsh & Co, 165 Duane St., New York.
Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Hunter, Jas., Machine Co., No. Adams Mass.
Kenyon, D. R. & Son., Raritan, N. J.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co., 34 Oliver St., Boston, Mass.
Dusters.
See Wool and Waste Dusters.
Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Dyers, Bleachers and Finishers
American Yarn Printing Works, 134-180 North 22d St., Philadelphia.
Barnesville Mfg. Co., Barnesville, Ga.
Brophy's, T, Sons, Jasper St, Philadelphia
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co., Kensington, Pa.
Franklin Bleaching & Finishing Works, Ltd., 70th St., and Haverford Ave., Phila.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Pond Lily Co. New Haven, Ct.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia, Pa.
Rowland, Samuel, Schuylkill Haven, Pa.
Silver Spring Bleaching Co, Manayunk, Pa.
U S. Finishing Co., New York.
Warren, W, Thread Works, Westfield, Mass.
Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co., Detroit.

Automatic Dyeing & Scouring Machinery Co., 776 E. 163rd Street, New York
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Antisdel, E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Birch Bros. (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W, & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Dubois, A. N., 2170 Sedgely Ave., Philadelphia, Pa. (Black for Hosiery.)
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Knapp, C. H., Paterson, N. J.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Webendorfer & Walling, Paterson, N. J.

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dyehouse Floors.
Warren Bros., 143 Federal St., Boston.

Dye Sticks.
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M., Philadelphia, Pa.

Dyestuffs and Chemicals.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, & Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Calmore & Co., 501 Chestnut St., Phila.
Corey, S. J, 273 Congress St, Boston.
Dilion & Co, 20 Cedar St, New York.
Dubois, A. N., 2170 Sedgely Ave., Phila., Pa.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Fortner, L. B., 36 Strawberry St., Phila.
Geisenheimer & Co, 189 Front St, New York.
Holliday & Sons, Ltd., Read, 7 Platt St., New York.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 122 Hudson St, N. Y.
Krauskopf, L., 430 North 3rd St., Phila.
Kuttroff, Pickhardt & Co., New York.
Matheson, W. J, & Co, 182-184 Front St, N. Y.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Roessler & Hasslacher Chemical Co, 100 William St, New York.
Schoellkopf, Hartford & Hanna Co., Philadelphia, N. Y. and Boston.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Stamford Mfg. Co, 133-137 Front St., N. Y.
Sykes & S treet, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.
United Indigo & Chemical Co., Ltd., 176 Federal St., Boston.
Vila, H S., 115 So 2nd St., Philadelphia, Pa.

Dynamos.
General Electric Co., 44 Broad St., New York
Sturtevant, Co., B. F. Boston.

Edgings.
See Tapes, Braids and Edgings.

Elastic Web Calendering Machines.
Knapp, C. H., Paterson, N. J.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Eastern Machinery Co, The, New Haven Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., 1783 Barker St., Phila., Pa.

Electrical Construction.
General Electric Co., 44 Broad St., New York.

Electric Fans.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.

Electric Lighting Apparatus.
Incandescent Electric Light Manipulator Co., 168 Bedford St., Boston.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Engine Foundations.
Warren Bros. Co., 143 Federal St., Boston.

Engineers, Mechanical.
Ferguson, John W, Paterson, N. J.

Exhaust Heads.
Burt Manufacturing Co, Akron, Ohio.
The Sterling Blower & Pipe Mfg, Co., 44 Hupshope St. Hartford, Conn.

Fans—Exhaust and Ventilating.
See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co., Matteawan N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feeds.
See Automatic Feeds.

Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Garnetts.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B F., Boston.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

Gear Cutting Machine.
Whiton, The D. E. Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Grate Bars.
U. S. Rocking Grate Bar Co., Elizabeth, N.J.

Heating.
See Ventilating.

Heddles.
Leisenring, John, Mfg. Co., Philadelphia, Pa.
Steel-Heddle Mfg. Co., 1842 Germantown Ave., Phila.
Watson, L. S, Mfg. Co, Leicester, Mass.

Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.

Hose.
Boston Belting Co., Boston.

Hosiery Labels.
Docker, Foster Co., Philadelphia, Pa.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.
Wisconsin Mfg. Co., Two Rivers, Wis.

Humidifying Apparatus.
American Air Moistening Co., Boston.

Hydro Extractors.
American Tool & Machine Co, Boston.
Rusden Machine Co., Warren, R. I.

Ironing Machines for Knit Goods.
Craw, J. W Laundry Machinery Co., So. Norwalk, Conn.

Jacquard Cards.
Rogers, H. E, South Manchester, Conn.

Key Seaters.
Leisenring Mfg. Co, Philadelphia, Pa.

Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger Mfg Co, Edgings, Germantow , Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Schneebeli, G. A. & Co., Nazareth, Penn.
Weimar Bros, 1817 East York St, Phila. Pa.

Knit Goods Finishing Machines, Crochet, Etc.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Industrial Mfg. Co., Camden, N J.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.

Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.

Knitting Machinery.
American Knitting Machine Co., 6th and Arch St. Philadelphia, Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Beattie, Wm. & Son, Cohoes, N. Y.
Branson Machine Co., 506 N. American St., Philadelphia.
Brinton, H. & Co, 213 Race St., Philadelphia Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Goodwin, J. C. Second and Diamond Sts., Phila., Pa. (Cutters.)
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y.
Keystone Knitting Machine Mfg. Co., 40 N. 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill. 127 Bread St, Phila, Pa.
Pepper Mch. Works, Lakeport, N. H.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co. Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.

Knitting Needles and Supplies.
Breedon, Wm. & Son, Amsterdam, N. Y.
Brinton, H. & Co. 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co, Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Keystone Knitting Machine Mfg. Co., 40 N 7th St, Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.

Knotter for Spoolers.
Barber & Colman, 11 Pemberton Sq., Boston.

Labeling Machine.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Laboratory Outfits.
Feidt, Geo. D. & Co, 528 Arch St. Phila, Pa

Lamps (Incandescent), Adjusters.
Incandescent Electric Light Manipulator Co., 116 Bedford St., Boston.

Leather Boards.
Rogers, H. E, South Manchester, Conn.

Looms.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts. Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St, Phila., Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Ross, Hugh R., Belfast, Ireland.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Works, Whitinsville, Ms,

Loom Harnesses.
Jeffrey Loom Harness Co, The Henry, Woonsocket, R. I.
Leisenring, John, Mfg. Co., Philadelphia, Pa.

Loom Pickers.
Loom Picker Co., Biddeford, Me.

Lubricators
Dixon, Jos., Crucible Co, Jersey City, N. J.

Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.

Lumpers.
Gerry, George, & Son, Athol, Mass.

Machinery Dealers.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Schofield, Geo, L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia.

Machinists' Tools.
Dodge Mfg Co., Mishawaka, Ind.
Leisenring Mfg. Co., Philadelphia, Pa.
Whiton, The D. E. Co, New London, Conn.

Mails.
Walder, J, Paterson, N. J.

Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ms
Elliott & Hall, 544 Hermon St, Worcester, Mass.
Fabric Measuring & Packaging Co., Postal Telegraph Bldg, New York.
Parks & Woolson Mach Co, Springfield, Vt.

Mechanical Draft.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave. Hartford, Conn.
Sturtevant Co., B. F., Boston.

Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 13th St, Phila.
Rusden Machine Co., Warren, R. I.

Mill Architects.
See Architects & Mill Engineers.

Mill Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Mill Brushes.
See Brushes.

Mill Builders and Engineers.
Ferguson, John W, Paterson, N. J.

Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn.
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Carpenter, Geo. B. & Co., Chicago, Ill.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawaka, Ind.
Douglas, R. D., Fall River, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Lane, W. T. & Bro., Port Chester, N. Y.
Leisenring, John Mfg Co., Phila., Pa.
Main Belting Co, 1219 Carpenter St, Phila.
National Supply Co, Paterson, N. J.
Shaw, Victor, Ring Traveller Co., Providence, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Steel-Heddle Mfg. Co., 1842 Germantown Ave. Phila.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sweet & Doyle, Cohoes, N. Y
Thatcher Belting Hook Co., Cleveland, O.
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.

Napping Machines.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.

Nails (Silk.)
Ryle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.

Oil Cabinets.
New York Oil Cabinet Co., New York.

Oil Filters.
Burt Manufacturing Co., Akron, Ohio.

Oil, Grease, Tallow.
Krauskopf, L, 430 North 3rd St., Phila.

Oilless Bearings.
Arguto Oilless Bearing Co, Wayne Junction, Phila.

Packing.
Boston Belting Co, Boston.
Jenkins Bros., New York.

Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 22 Dey St, New York.

Paper Tubes.
Douglas, R. D., Fall River, Mass.

Patent Solicitors.
Crosby & Gregory, 34 School St, Boston, Mass.
Siggers, E. G., Washington D. C.
Wolhaupter, D. P., Equitable Bldg., Washton, D. C.

Pavers & Paving Materials.
Warren Bros. Co., 143 Federal St., Boston.

Perforated Metal.
Beckley, A. J. & Co., Garwood, N. J.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.

Picker Sticks.
Loom Picker Co., Biddeford, Me.
Southern Bobbin Co., Greensboro, N. C.

Pipe Covering.
Keasbey, E. A, 83 Warren St, New York.

Pneumatic Conveying.
See Ventilating.

Power Transmitting Machinery.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Carpenter, Geo. B. & Co, Chicago Ill.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co, Mishawaka, Ind.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 23d and Wood Sts, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Link Belt Machinery Co, Chicago, Ill.
Rusden Machine Co., Warren, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.
Smith, T. H., Cotton Mill, Jamestown, N. Y.

Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.

Press Boards and Fenders.
Rogers, H. E, South Manchester, Conn.

Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Crawford, J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ms
Hart, Charles, Frankford, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa
Phillips Co, The Thomas, Providence, R. I.

Printers (Fabrics and Yarn.)
American Yarn Printing Works, Philadelphia.

Pulley Covers.
Warren Co, The (Inc.), 34 Jackson St, Chicago, Ill.

Pulleys.
See Power Transmitting Machinery.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.

Purifying & Filtration Plants.
Scaite, W B. & Sons, Pittsburg, Pa.

Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa

Raw Hide Gears.
New Process Raw Hide Co. Syracuse, N. Y

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Leisenring, John Mfg. Co., Phila.
Loom Picker Co., Biddeford, Me.
Walder, J, Paterson, N. J.

Reeds and Harnesses.
Jeffery Loom Harness Co, The Henry, Woonsocket R. I.
Leisenring, John, Mfg. Co., Philadelphia, Pa.

Ribbons.
Barton, F. C., 54 Franklin St., New York.
Cheney Bros, S. Manchester, Ct.

Ring Travellers.
National Ring Traveller Co., Providence, R. I.
Morley Button Mfg. Co., Boston.
Shaw, Victor, Ring Traveller Co., Providence, R. I.

Roofing Asphalt.
Warren Bros. Co. 143 Federal St., Boston.

Roofing Materials (Manufacturers).
Warren Bros. Co., 143 Federal St., Boston.

Rope Transmission.
American Mfg. Co., New York.
Carpenter, Geo. B & Co., Chicago, Ill
Dodge Mfg Co, Mishawaka, Ind.
Link Belt Mfg. Co., Chicago, Ill.

Roving Cans.
Diamond State Fibre Co., Elsmere, Del.
Hill, James Mfg. Co., Providence, R. I.

N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford, Mass.

Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.

Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I

Sample Cards and Mounting.
Merchants Sample Card Co., 33 Sullivan St., New York.

Scales
Sweet & Doyle, Cohoes, N. Y.

Schools.
American Correspondence School of Textile, New Bedford, Mass.
New Bedford Textile School, New Bedford, Mass.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.

Screens (Perforated.)
See under Perforated Metal.

Selling Agents.
See Commission Merchants.

Separators.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Draper Co., The, Hopedale, Mass.

Sewing Machines and Supplies.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F., Walpole, Mass.
Industrial Mfg. Co., Camden, N. J.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Rusden Machine Co., Warren, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Willcox & Gibbs S. M. Co., New York.

Shafting Hangers, Etc.
See Power Transmission Machinery.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H., Paterson, N. J.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren, R. I.

Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch). Somerville. Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H , Paterson, N. J.
Rusden Machine Co., Warren, R. I.

Sizing, Starch and Gums.
Arabol Mfg. Co., 155 William St., New York.
O. K. Soap Co., 968 Franklin St., Phila.
Stein, Hirsch & Co, 165 Duane St, New York.

Slashers.
Cohoes Fndry & Machine Co, Cohoes, N. Y.
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R. I.

Soaps.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 968 Franklin St., Phila.

Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Undergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spindle Tubes.
Bamford & Smith, Pascoag, R. I.

Spinning Cylinders.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.

Spools. *See Bobbins, Spools Shuttles, Etc.*

Spool Cotton for Mfrs. Use.
Warren, W. Thread Works, Westfield, Mass.

Spooler Knotter.
Barber & Colman, 11 Pemberton Sq., Boston.

Sprinklers
International Sprinkler Co., Philadelphia, Pa.

Stamps for Hosiery.
Atlas Copper Stamp Works, 15 Whitehall St., N. Y.
Wells, Wilfred, 505 W. Lehigh Ave., Philadelphia.

Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co, Hamilton, O.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.

Steam Surface Coverings.
Keasbey, Robert A., New York.

Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia.
Jenkins Bros., New York.
Rusden Machine Co., Warren, R. I.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sturtevant Co., B. F., Boston.
U. S. Rocking Grate Bar Co., Elizabeth, N. J

Steam Valves.
Jenkins Bros., New York.

Stop Motion for Looms.
See, also, Warp Stop Motions.
Tucker Stop Motion Co., Winsted, Ct.

Tanks, Tubs and Vats.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Cypress Lumber Co, Apalachicola, Fla.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co. Warren, R. I.
Stearns, A. T, Lumber Co, Neponset, Mass.
Woolford, George, 2240 No. 9th St, Phila, Pa.

Tapes, Braids and Edgings.
Barton, F. C., 54 Franklin St., New York.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo. W Philadelphia, Pa.
Friedberger Mfg. Co, Germantown, Pa.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.
Schneebeli, G. A. & Co., Nazareth, Pa.
Weimar Bros, 1817 East York St, Phila, Pa.

Temples.
Draper Co., Hopedale, Mass.

Tension Pulleys.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
N. E. Ventilating & Heating Co, 930 Manton Ave. Providence, R. I.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.

Testing Machines.
Howard, Geo. C., 1783 Barker St., Phila., Pa
Textile Schools.
See Schools.
Thread Board for Spinning & Twisting Frames.
Houghton, L. T. & Sons, Worcester, Mass.
Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.
Tickets and Labels.
Saranac Electrical Mfg Co., St. Joseph, Mich.
Towers.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Tower Clocks.
Howard E. Clock Co., 403 Washington St., Boston; 41 Maiden Lane, New York.
Turbine Governors.
Replogle Governor Works, Akron, O.
Turbines.
(See Water Wheels.)
Valves—Rubber.
Boston Belting Co., Boston, Mass.
Ventilating Apparatus.
Allington & Curtis Mfg. Co, Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston.
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Massachusetts Fan Co., Exchange Bldg., Boston.
New England Ventilating & Heating Co, Providence. R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philapelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.
Wall Whitening.
Moore, Benj. & Co, Brooklyn, N. Y.
Warp Stop Motions.
Draper Co., Hopedale, Mass.
Washers (Cloth).
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass
Butterworth, H. W. & Sons Co., Philadelphia.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R., & Son, Raritan, N. J.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co , Warren, R. I.
Watchman's Clocks.
Am. Watchman's Time Detector Co., Broadway, N. Y.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E. Clock Co., 406 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Nanz & Co, 127 Duane St., New York.
Waterproof Floors.
Warren Bros. Co., 143 Federal St., Boston.
Water Purifiers & Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.
Water Wheels.
Alcott, T. C., & Son, Mt. Holly, N. J.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.
Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Akron, O.
Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.
Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.
Winders. (Hosiery.)
Altemus, W. W. & Son, Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Universal Winding Co, 95 South Street Boston.
Wood Pulleys.
Chase Pulley Co., Providence, R. I.
Dodge Mfg Co., Mishawaka, Ind.
Saginaw Manufacturing Co, Saginaw, Mich.
Wool Cleaning Compound.
India Alkali Works, Boston.
Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.
Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo, & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Woolen and Worsted Machinery.
Altemus, W. W, & Co, 2316 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Arlington Mch. Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F , Walpole, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia. Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave , Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co. The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. B., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.
Wool Shoddies.
Slack, Wm. H. H., & Bro, Springfield, Vt.
Wool Washing, Preparing and Drying Machinery.
Hunter, Jas. Machine Co., No. Adams, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Phillips Co, The Thomas, Providence, R. I.
Sargent's, C. G, Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

YARNS, THREADS, ETC.

Banding.

Moore, C. & Co. 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns.

American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Barnesville, Mfg. Co., Barnesville Ga.
British Cotton and Wool Dyers' Association, Ltd., 231 Chestnut St., Phila., Pa.
Buckingham & Paulson, 83 Leonard St. New York.

Catlin & Co, New York and Boston.
Charles, W. B, Amsterdam, N. Y.
Dana Warp Mills, Westbrook Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. h., & Co, Boston and Phila, Pa.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A. 54 Franklin St., N. Y.
New England Cotton Yarn Co, New Bed ford, Mass.
Orswell Mills, Fitchburg, Mass
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns Wool Spun.

Broadbent, J. & Sons, Unionville, Conn.

Flax. Hemp. Jute and Ramie.

Fawcett, Hughes, 115 Franklin St., N. Y
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.

British Cotton and Wool Dyers' Association, L'd., 231 Chestnut St., Phila., Pa.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
New England Cotton Yarn Co, New Bed ford, Mass

Glazed Yarns.

Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Harness Twine.

Cranston Worsted Mills, Bristol, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Mar ket Sts.)
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.

Barnesville Mfg. Co., Barnesville, Ga.
Boyer, B. F, & Co, Camden, N. J.
British Cotton and Wool Dyers' Association, Ltd., 231 Chestnut St., Phila., Pa.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Herbst, Albert & Co., E. Allegheny Ave., Philadelphia.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic Mass.
New England Cotton Yarn Co., New Bed ford, Mass.
Orswell Mills, Fitchburg, Mass.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Skerry, A T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Mercerized Yarns.

British Cotton and Wool Dyers' Association, Ltd., 231 Chestnut St., Phila., Pa.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co, Philadelphia.
Montgomery, J. R. & Co., Windsor Locks, Conn.
Morgan, E. A., 54 Franklin St., N. Y.

Mohair Yarns.

Cranston Worsted Mills, Bristol, R. I.
Goff, D. & Sons, Pawtucket, R. I
Queensbury Mills, Worcester, Mass.
Skerry, A. T, & Co., 47 Leonard St., N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, New York.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 229 Chestnut St, Phila, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.

Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, New York.
Mason, Dan'l, Voorhis Mill, Paterson, N. J.
Ryle Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.

Boyer, B. F, & Co, Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Eaton Rapids Woolen Mills, Eaton Rapids, Mich.
Eddy & Street, Providence, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St. Boston, Mass.
Speed, James, 170 Summer St, Boston.

Worsted Yarns.

Alleghany Worsted Mills, Phila, Pa.
Boyer, B. F, & Co, Camden, N. J.
Campion, Richard, 17 Bank St., Philadelphia.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson Ave., Camden, N. J.
Goff, D. & Sons, Pawtucket, R. I.
Herbst, Albert, & Co., E. Allegheny Ave., Philadelphia.
Pocasset Worsted Co., Thornton, R. I.
Queensbury Mills, Worcester, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A. T, & Co. 47 Leonard St, N. Y.
Speed, James, 170 Summer St, Boston.

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Practical mill man who will invest capital in and take position of superintendent of a new and thoroughly modern men's underwear plant in the South. Right kind of trade to good man. Address, Underwear, care Textile World, Boston, Mass.

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One who has had experience on Jersey work, in both worsted and cotton, on the Terrot system of spring needle circular frames. Steady work and good position for competent hand. Address, Welle, care of Textile World.

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To manufacture Gloves, Mittens and Hosiery. Must start in small way. Have building, machinery, etc. Small capital required. Address "Box C," care of Textile World, Boston, Mass.

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German, Doctor of Science (analyst and experimental) with some years' practical experience in bleaching, dyeing and printing, desires a position. Address, Chiffre K, care of Fluss, 1447 1st Ave., New York City.

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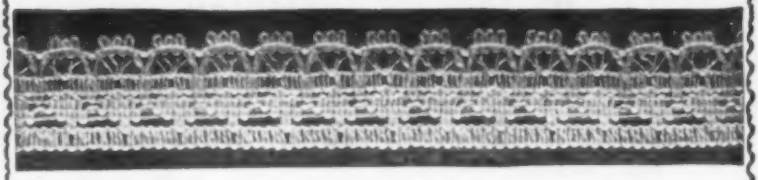

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The advertisers in the following columns should be addressed in care of TEXTILE WORLD or inquiries concerning them may be addressed directly to "Information Department TEXTILE WORLD," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Any subscriber may file his application, and no charge is made until position is secured.

The business of this department is held strictly confidential.

The applications of good overseers in every department, who are in want of positions are solicited.

Manufacturers are invited to use this department when in need of skilled men; each case will be handled confidentially, with promptness and judgment, and without charge to manufacturers.

WOOLEN SUPERINTENDENTS.

1829 **Woolen Supt.**, or asst. or dyer. Age 35; American; married. Has worked on kerseys, coverts, worsteds, cassimeres, etc. Is familiar with Davis & Furber jackets and mules, and Crompton & Knowles.

1916 **Agent or Supt.**, who understands designing and also the work of every department, is open to a position. Has been a superintendent for the last 15 years, and is thoroughly competent to take charge of a large mill. Scotch Irish; 38 years old; married. Has turned out all classes of woolen and worsted goods in all wool and in wool substitutes. Is well up in the mixing and blending of stocks. References of the best.

1890 **Manager or Supt.** of a woolen mill, who understands designing, is open to an engagement. 34 years old; Scotch, and single. Large experience in Scotch and Canadian mills on tweeds, worsteds, overcoatings, etc. Good references.

1891 **Supt. of Woolen or Worsted** Mill, who understands designing, is open to a position. 23 years of age; an American; single. Well recommended, and with good experience.

1818 **Supt.** Worked on fancy cassimeres and worsteds. Age 40; American; married. First class man in every respect, and large experience.

1930 **Asst. Supt.**, woolen or worsted, or overseer of twisting, spooling, dressing. Age 40; American; married. Is familiar with English and American machinery. Excellent references.

1575 **Assistant Supt. Woolen.** A graduate of the Philadelphia Textile School (highest standing), and has had more than 7 years' experience in the various departments of a Massachusetts mill. Wants to get a start where there is fair chance of advancement. Age 28, single.

1924 **Assistant Supt.**, boss weaver and boss dresser desires a position in a woolen mill. 39 years of age; an American; married. Has worked on all classes of woolen goods on both English and American machinery. Good references from former employers. 15 years' experience.

1942 **Supt. Woolen Mill** wants position. Age 42; American; married. Cassimeres, cheviots, kerseys, fancy dress goods, ladies' broadcloths, carriage cloths, etc. Wants place in N. E. or Middle States Large experience.

COTTON SUPERINTENDENTS.

1877 **Agent or Treasurer.** Good references. Recently assistant manager of a large mill. Fully competent.

1918 **Supt. of Cotton Yarn** or plain cloth mill is desirous of obtaining a position. Is a native of Georgia; 29 years old; married. A splendid manager of Southern help and has worked in every department of a cotton mill on all good makes of machinery. Can refer to several large cotton mill owners.

1867 **Assistant Manager** who understands the handling of cottons and linens, desires position in a cotton mill. 24 years of age; American; unmarried. Can satisfy anyone in regard to references, experience, etc.

1527 **Supt. of Cotton Mill**, or overseer of mule or ring spinning is open to a position; 16 years experience in Northern mills, on yarns, denims, awnings, apron checks, bicycle suitings, shirtings, etc. etc. Familiar with all well-known makes of cotton machinery; 29 years old; American; married. Can give references from large Massachusetts mills.

1898 **Cotton Supt.**, 33 years old, married, and an American, experienced on coarse and fine yarns and white goods, is open to a position. Conversant with all standard makes of cotton machinery. Can refer to prominent Mass. men in the cotton trade.

1896 **General Manager** and Superintendent of cotton mill desires position; 37 years old; single; English. 18 years' experience on yarns, flannelettes, denims, grays, and shirtings. Good references.

1938 **Supt.** or Supt. and Designer. Age 33; Scotch; married. Fine and plain fancy ginghams, shirtings, fine sheer fabrics, cotton and worsted dress goods, plain and Jacquard silks and Jacquard bed quilts, also print cloths. Crompton & Knowles looms. All kinds of winding, beaming, warping and quilting machinery, also finishing. At present studying picking, carding and spinning machinery.

1806 **Wanted**, position as superintendent by up-to-date all around man from picker room to cloth room, but weaving is specialty. Cotton sheeting, shirtings, drills, checks and stripes, flannels and blankets, jute bagging, camels hair. Good manager, strictly temperate and excellent references. Would take overseer of weaving.

WOOLEN CARDERS.

1314 **Overseer of Carding.** Age 32; American; married. Beavers, kerseys, tricots, broad cloths, cassimeres, dress goods, flannels, army and navy cloth. Well spoken of by former employers.

1270 **Boss Carder** (and spinner, if desired) in an underwear or hosiery mill. Fine and heavy wool and cotton. German; age 34. First class man in every respect. Excellent references.

1899 **Worsted Carder,** 9 years in large mill in Lawrence, would like a position; 23 years old; English; single. Has worked on almost all grades of stock, and understands all well-known makes in worsted cards. Good references.

1903 **Boss Carder,** woolen or worsted mill, desires a position. Experienced on fine and coarse work; 37 years of age; American; married. Can refer to responsible parties. Moderate wages desired. Will go to any part of United States.

1827 **Overseer of Woolen Card** Room. Has worked on blankets, robes, friezes, cheviots, kerseys, flannels, knit goods, cassimeres, hair lines and unions. Age 34; American; married. Wants not less than $3.00 per day.

1944 **Carder,** or carder and spinner. Age 48; unmarried; American. Has worked on all kinds of woolens, and of late on shoddy and cotton mixes. Is familiar with Davis & Furber machines. Excellent reference from past employer.

COTTON CARDERS.

1886 **Overseer of Cotton Carding;** 31 years of age; married; of English parentage; desires position in the Middle, Atlantic or New England States. Familiar with Lowell, Pettee, Biddeford, Woonsocket, Whitin, Mason and all makes of pickers of above machinery. Good references.

1893 **Boss Carder of Cotton.** 38 years old; married; an American; who can also handle a weave room of from 300 to 500 looms, wishes to make a change. Has had over 15 years' experience in New England mills. Best of references.

1919 **Overseer Cotton Carding and** Spinning, who has had an experience of over 10 years in N. E. and New York mills, is open to a position. 26 years old; American; single. Thoroughly competent and reliable. Best of references.

1931 **Overseer of Carding and Combing;** 33 years old; American; single. Has worked on all classes of fine combed work; both American and English machinery. Can take place immediately. 12 years in a large New England mill.

1932 **Overseer of Carding** or would take assistant superintendent position. Age 27; American; single. Carded and combed American, Egyptian and Sea Island Cotton, making yarns from 8s to 100s; both plain and colored goods. Can come at once.

1929 **Overseer** cotton carding and spinning is open to a position in any part of U. S. Age 31; German; single. 12 years' experience as overseer carding in important cotton spinning mills in France, Germany, Bohemia and Italy. Specialty of Egyptian and American combed fine yarns. Best of references.

WOOLEN WEAVERS.

1645 **Overseer Weaving.** Age 30; married, American. Has worked in weave room since he was 17 years old, as weaver, fixer and secondhand of weaving, except for a short time was traveling salesman. Has worked on ladies' dress goods, men's fine worsted suitings, overcoatings, cloakings, etc., on Crompton & Knowles and Jacquard looms. Excellent references.

1482 **Weaver or Wool Sorter.** Has worked on cassimeres, cheviots, tricots, kerseys and cloakings. Good references.

1937 **Boss Weaver.** Can furnish excellent recommendations. Is a first-class man on all kinds of fancy woolen goods, and is thoroughly posted on Crompton & Knowles looms. Wants a place at $2.75 or $3.00 per day. Will go anywhere. Age 39; American; married.

1940 **Boss Weaver or Designer,** or could fill a position as all around man in a small mill. Age 42; Scotch; married. Worked on fancy cashmeres, blankets, flannels, carriage robes, and other fancy goods. Is familiar with Crompton & Knowles, Davis & Furber, and other looms. Wants to go West or South.

1947 **Boss Weaver,** designer or superintendent. American; married; age 36. Fancy cassimeres and worsted cloakings; most all grades of goods for ladies' and gents' wear. Crompton & Knowles and Davis & Furber looms and Jacquard.

1922 **Boss Weaver or Loom Fixer** on Crompton & Knowles looms, 48 years of age, English, married, desires a position in the West or South. Is thoroughly experienced on cassimeres, flannels and jeans. Good references from large Western mills. One worker in family who can grind and keep shears in good repair.

COTTON WEAVERS.

1934 **Overseer of Weaving.** Age 31; English; married. Worked on sheetings, sateens, twills, fancies of all kinds and fancy lenos and lappetts. 14 years experience as loom fixer and 18 months as second hand.

1235 **Overseer of Cotton Weaving,** with long experience in large Eastern cotton mills, is open to a position. Has handled prints, twills, sateens, lenos, cheviots, dress goods, and also Jacquard cloths. Thoroughly understands Lowell, Crompton & Knowles, Whitin and English looms. 37 years of age; American; single. Best of references from former employers.

1879 **Overseer of Weaving** or Assistant Supt. 17 years' experience in New England cotton mills, having charge of 1300 looms for 6 years recently. Fine and coarse goods on all well known machinery. Best of references.

1826 **Wanted by Steady, Industrious** man, a situation as overseer, in Tape mill. Has had considerable experience, but does not know everything, but willing to improve. $2.25 per day. Has been overseer a short time, and has perfect control of help. Age 46; English; married. No family. Would go anywhere, and settle.

WOOLEN SPINNERS.

1927 **Overseer Spinning,** carding or flyers. 37 years old; married, and can furnish best of references. Twenty-three years' experience. A German.

1784 **Worsted Drawer and Spinner.** Would take twisting. Age 2>; English; single. Can furnish references as to ability and character.

1912 **Boss Worsted Spinner** on cop- and flyer frames, who is also familiar with spooling, reeling, skein winding and dressing, is open to a position. Thirty-three years old; American and single. Has had 19 years' experience in one of the largest worsted mills in N. E., making yarns from 1 ½s to 56s from domestic and foreign wools. Has also handled mohair and camel hair. Good references.

1917 **Overseer Woolen Spinning.** Is thoroughly competent to take charge of a large spinning room. 38 years old; French; married. Has spun yarns for flannels, tweeds and knit goods, also cotton and wool mixes, shoddies, ranging in all from ½ to 14 runs. Is familiar with Davis & Furber, Johnson & Bassett, Platt and other makes. Very satisfactory references.

1709 **Worsted Spinner or Section Hand.** Age 22 and unmarried. At present employed, but not satisfied with surroundings. Would accept moderate pay

633 **Overseer Mule Spinning** desires to move from Maine on account of wife's health. At present in good position. Age 39; married, Scotchman.

1941 **Boss Spinner.** Wants $3.50 or more. One daughter a spooler and twister. Excellent references. Is familiar with Davis & Furber, Johnson & Bassett, and other makes of machinery.

COTTON SPINNERS.

1068 **Overseer of Frame Spinning,** Twisting, Spooling and Warping desires position and would accept that of second-hand. Has worked in some of the best mills in N. E. (37 years old, an American and single) on Nos. running from 4s to 80s. Is familiar with Whitin, Mason, Biddeford and Lowell machines. Will go to any of the N. E. or Middle States. A1 references, and does not expect a fancy price.

1915 **Overseer of Ring Spinning,** or carding, would like a position in a cotton mill. Is familiar with fine and coarse yarns and almost all American machinery. An American; 33 years of age; married. Best of references.

1753 **Overseer of Spinning** wants position in the South. Has worked on prints, flannels, sheets, colored double nap flannel dress goods. Age 28; married; American. Excellent references from past employers.

1750 **Overseer of Ring Spinning,** Spooling and Warping. Has been overseer in large mills, and can furnish best of references. Age 28; American; single. Has worked on ducks, prints, sheetings and fancies.

DESIGNERS.

1445 **Designer or Finisher,** or will take position as supt. of a small mill. German; Protestant; age 36; married. Has worked in several New England mills, and refers to them. Graduate of the Werden Textile School, Saxony. Has worked on kerseys, beavers, cassimeres, cheviots, etc. Is familiar with all makes of American and German machinery.

1838 **Designer,** assistant supt., assistant designer, overseer of weaving, secondhand large weave room, loom fixer, boss spooler, dresser, or mender Age 48; American; single. Worked on worsteds, cassimeres, dress goods, blankets, chinchillas, cloakings, etc. All patterns of Crompton & Knowles looms, Davis & Furber spooling, dressing and weaving machinery, and Worcester warp compressor.

1599 **Assistant Designer.** A young man who is studying woolen and worsted designing would like an opportunity to get practical experience, and will accept very small wages Has worked in mill for two years as weaver on Crompton & Knowles looms. Excellent references as to character.

1685 **Boss Dresser or Assistant Designer.** Has taken a thorough course in designing, and is well up in calculations and in the making of fancy men's wear goods of all kinds. Has worked in Scotland and three years in this country. His knowledge of yarn calculations and practical experience as dresser tender makes him well fitted to fill a position as boss dresser and to run a room in an up to date and efficient manner, or to fill a position as designer or assistant.

1923 **Assistant Designer** on woolen or worsted dress goods and suitings is open to a position. Age 21; American; single. A graduate of one of the largest textile schools in the country, and has had experience in a good New England mill. Also understands flannels and satinets. Good references.

1888 **A German Designer,** who understands all machinery necessary for the manufacture of men's wear, woolen or worsted, is open to a position at $3000 per year. Eight years' experience in Germany and five years' in one of the largest mills in the United States. 33 years of age, and single. Best of references.

1897 **A Young Man,** 28 years of age, competent to handle the designing for a cotton or silk mill, would like a position. Has made in cotton, plain, fancy and leno; in silk, tie silks, dress goods and linings. Looms all well-known makes. Is Scotch, and single 14 years' experience in weave room and designing room. Good references from N. J. and Conn. mills. Four workers in family—weavers.

1837 **Designer** in small mill, or assistant in large mill. Age 24; Scotch; single. Has worked on fancy cassimeres, plaid backs, coverts, unions, worsted trowserings and shirtings. Fair knowledge of Jacquard designing. Johnson & Bassett mules, Davis & Furber dresser, and Knowles looms. Is willing to work for moderate salary, with chance of promotion.

1789 **Designer,** or assistant supt. and designer. An A1 color designer. Can get up good line of fancy woolen and worsted goods which will be good sellers and profitable to the manufacturer. Graduate of a prominent designing and textile school in Germany. Is well posted on all kinds of stock cotton and shoddy, and with the general work of a woolen mill.

FINISHERS.

1771 **Boss Finisher,** or would take good secondhand position. Has worked on all classes of goods. Age 53; Scotch; married. Reason for his wishing to change is on account of mill where he is now employed not running steadily.

1437 **Overseer of Finishing** desires a position in a woolen mill. Is familiar with chinchillas, kerseys, cassimeres, dress goods, casket cloths, worsteds, etc; 33 years of age and single; steady and industrious, and can give good references.

1911 **A Boss Finisher** of over 20 years' experience on cassimeres, flannels, dress goods cloakings and worsteds, is open to a position. Understands Parks & Woolson, Curtis & Marble, Hunter, Miller Press Co., Rodney Hunt and other machines. Married; 44 years old, and can give good references. Over 15 years in last place.

1921 **Boss Finisher** of a satinet mill or secondhand of a woolen mill, would like a position. Has held these positions in good sized mills, and is familiar with satinets and woolens. 23 years of age; American; single. Good references as to steadiness, reliability and quality of work.

1716 **Finisher.** Age 29; English; married. Has worked as wet finisher, shearer, gigger, second-hand and overseer. Prefers a mill making cassimeres, worsteds, dress goods and face finished goods. A high grade of goods. Is familiar with all kinds of American and English finishing machinery, and can keep same in the best of repairs. Prefers Eastern States. Can take position at one week's notice. Best of references.

1887 **Overseer of Finishing** in a cotton or worsted mill, having several years' experience on cotton flannels, shirtings, blankets, crashes, cotton and worsted dress goods, and carriage cloths, is open to a position. 25 years of age; American; married, and strictly temperate. Will go to any part of the United States, except West. Best of references.

1900 **Boss Finisher** of men's wear, ladies' dress goods, worsteds, cassimeres, kerseys, cotton and woolen mixes, who has gained his experience as finisher in some of the large English and American mills, is open to a position. Is familiar with all standard makes of finishing machinery; 48 years of age; Scotch; married. Can refer to well-known men.

1526 **Foreman of Finishing Room,** Folding Packing, etc. Age 45; married; English. Has worked on white and colored goods and prints. Is acquainted with every kind of machinery used in his business. Has worked 11 years in this country. Can give good references.

1489 **Boss Finisher, Second-Hand** or Boss Shearer. Well experienced; excellent references. English; age 27; single.

1658 **Overseer Woolen Finishing.** Age 35; married. A number of years' experience as overseer in first-class N. E. mills. Worked principally on kerseys, meltons, unions and cassimeres, and is familiar with Curtis & Marble, Parks & Woolson and Cleveland machines. First-class references.

1632 **Boss Finisher** on fancy and piece dye worsteds, kerseys, doeskins, cassimeres, etc., and all kinds of knit goods. A man of unusually large experience for his age and well recommended. Age 29; American. At present employed, but will change for $4 a day.

DYERS.

1505 **Boss Dyer.** 11 years experience coloring according to the requirements of the trade, on all kinds of wool, worsted yarns, worsted piece dyes, cotton warp worsted piece dyes, cotton and shoddy piece dyes, shoddy, raw cotton and cotton yarns. Willing to work for reasonable wages.

1933 **Foreman Bleacher** and Dyer on cotton goods. Has a specialty of dyeing fast oxidized black on piece goods. Is also a color dyer. Age 34; English; married. Prefers Middle or Southern states.

1303 **Manager of Dye Works,** or boss dyer, who has been connected with some of the largest dye houses both in England and the United States is open to a position. Understands piece dyeing of all kinds, cotton, wool, mohair and alpaca; pile fabrics; knit goods, wool and cotton; yarns, wool, silk and cotton; raw stock; and wool and merino shoddies. Is 36 years old; English; married. Good references from a number of prominent men in the textile industry.

1839 **Boss Dyer,** English, age 35, married. Has been boss dyer for 14 years in this country and England on all classes of woolen and cotton warp goods, such as cashmeres, cloakings, and shoddy, and is well up in dyeing light shades out of dark stock. Understands worsted piece dyeing, raw stock and worsted yarn. Steady and reliable, and best of references. Would work for fair pay.

1913 **Boss Dyer** or secondhand, who has had over 23 years' experience in large woolen mills in N. E., is open for a position. 44 years of age; married. Is familiar with cotton, woolen and worsted yarn dyeing for cassimeres, dress goods and trowserings; also piece dyes and raw stock. Best of references.

1908 **Boss Dyer and Bleacher.** Age 23; American; single. Now employed, but will change for good job. Best of references from present employers.

1894 **A Competent** cotton dyer, experienced on long chain, short chain, skein yarn, and raw stock, is open to a position. Age 48; Scotch; married. Will accept reasonable wages. Has good references.

1883 **A Boss Dyer** who understands cotton and wool raw stock dyeing, piece dyes, knit goods, and has had large experience on cotton skein yarns for the webbing trade, is open for a position. 38 years old; married, and an American. Will accept a reasonable salary.

1199 **Dyer** wants position on fancy cotton skein yarns, long and short chains. Has thorough knowledge of alizarine and indigo blue dyeing. Also fancy piece dyeing. Has 20 years' experience. Can give first class references.

1928 **Overseer of Dyeing,** 28 years of age, American, single, would like a position in a New England mill or in the Middle Atlantic States. Eight years' experience on wools, shoddies, raw cotton and cotton yarns, piece dyed kerseys, beavers and carriage cloths. Good references from large Eastern mills. Salary moderate.

1704 **Boss Dyer.** Age 36; English; single. Is familiar with dyeing cotton yarn and warp both for bleaching, fulling and other purposes. Has dyed for the best firms in England, also for export work.

KNITTERS.

1943 **Fixer or Foreman.** Age 27; American; married. Has had five years' experience on knitting machines, including Standard B and C machines, can handle new Victor machines, also sewing machines. Wants to change on account of location.

1945 **Asst. Supt.**, or overseer of a large stitching department in knit underwear mill. Willcox & Gibbs sewing machines, Union Special and loopers.

1946 **Supt.** of knitting mill, or would take position as boss knitter. Age 29; Canadian; married. Fleece-lined balbriggan men's and children's ribbed fancy tops and nearly all kinds of knit underwear. Is familiar with all makes of American knitting and finishing machinery, with the exception of Cooper's circular rib. Will not go West or South.

1905 Would like position in a Pennsylvania mill taking charge of Union Special, Merrow, Wheeler & Wilson, Singer, Wilcox & Gibbs, Kruse & Murphy, or any other kind that is used in finishing underwear. Best of references.

1824 **Boss Knitter or Fixer** on ribbed underwear. Has worked on fancies, double knees and tops and plain work. Is familiar with Brinton & Denny, McMichael & Wildman, Huse and Pepper machinery Will work for $2.50 or more, according to position.

1776 **Boss Knitter.** Had constant experience in the knitting business for the past twenty years. Can handle any kind of goods made on a circular spring needle knitting machine. Age 36; American; married. Excellent references.

1920 **Supt. of Glove Factory** or knitting mill who understands the making of fabric gloves of silk, cotton, cashmere, and also knit gloves and mittens. 44 years of age; German; married, and has four workers in family, who understand glove sewing, pointing, etc. Has held responsible positions, and is a good manager. Can refer to some large establishments in New York and Chicago.

1939 **Boss Knitter.** Age 42; English descent; married. Has one girl who is a winder. 11 years as foreman knitter in one mill, and for the past seven years in full charge of knitting and winding in a mill, but wan s to change on account of locality. Campbell & Clute, Tompkins and Crane machines. Balbriggan underwear, fleece lined and two-thread work, also fancies. Worked mostly on woolen goods.

1906 **Supt. or Agent** of a hosiery mill is open to a position. Thoroughly understands spinning, dyeing and is familiar with all well-known makes of knitting machinery. American; 24 years old; single. Has been superintendent for the last seven years in a large plant. Best of references.

1905 **Boss Knitter,** age 26 and married, with six years' experience on all kinds of Jersey ribbed knit ladies' underwear, would like to secure a position as foreman knitter in a small mill in Pennsylvania, or as assistant in a large one. Practical experience on Nye & Tredick, Stafford & Holt, McMichael & Wildman, Brinton and Champion rib machines; understands all kinds of sewing machines and repairs, also boilers and can run them on economical plan. Can do machine repairing in general, having had early training as machinist. Is strictly temperate, and can give references.

MISCELLANEOUS.

1935 **First-class Twister** and Entering. 25 years' practical experience wishes steady position in country place.

1489 **Boss Finisher.** Second hand or Boss Shearer. Well experienced; excellent references. English; age 27; single.

1835 **Beamer, Twister,** also understands drawing in and splitting. Age 27; American. Has worked on ginghams, dress goods, shirtings and cotton worsted.

1851 **Machinist in Woolen Mill.** Can repair looms, cards, mules, etc., of every description, also worsted machinery. Understands forging tools and has fair knowledge of electricity. Ten years experience in some of the best mills in New England.

1873 **Wanted** situation as Master Mechanic in cotton corporation. Has had large experience. Middle aged; strictly temperate. A graduate of a technical school. Learned carpenter's trade and machinist's.

1895 **Shipping Clerk** and Bookkeeper, familiar with mill office work, would like to take a position as such in any part of United States. 21 years of age; single; an American. Best of references.

1865 **Machinist and Fixer.** Has had eight years' experience. 24 years old; English; single Is thoroughly familiar with Singer, Wheeler & Wilson, Merrow, Union Special, Lamb, Pepper, and Hepworth and Beattie loopers

1873 **Master Mechanic** in cotton corporation. Has had large experience. Middle aged; strictly temperate A graduate of a technical school. Learned carpenter's trade and machinist's.

1866 **Overseer of Burling** and Sewing o Cloth Examiner in commission house. Have had 25 years' experience in the cloth room and can handle any class of woolens or worsteds, either dress goods or men's wear. 41 years old; Irish; married. Best of references. Have a son 19 years old who is a percher and brusher.

1914 **A Young Man** who thoroughly understands the keeping of mill books would like a position in the South rn States or would go to Cuba or Puerto Rico. Is a first-class man and perfectly familiar with general office work. An American; 22 years of age; single. Steady and reliable, and can give good references.

1910 **Loom Fixer** on Knowles, Crompton, Stafford, Whitin, Mason, Colvin and other looms, would like a position. Has made golf cloths, plaid backs, fancy dress goods, viennas, kerseys, etc., also cotton lenos, leppets, novelties and plain goods. American; 38 years of age and single, steady and reliable, and can give satisfactory references.

1659 **Bleaching Overseer.** Seven years' experience as overseer, and has first-class references. Has handled all classes of work in the cotton piece goods line, from heavy shoeduck, drills, etc. down to cheesecloth, and bag goods, also all kinds of colored work, such as colored bordered handkerchiefs, colored striped shirtings, colored spots, also white and colored towels, linen crash, all kinds of cotton flannels, etc.

1877 **Paymaster and Cashier** with 10 years' experience, wants position. Good references and can give bond if required.

SLIPPING BELTS

GO ON WASTING YOUR POWER—YOUR MONEY—
HOUR AFTER HOUR, EVERY DAY THEY RUN

WARREN'S PULLEY COVER

will stop this waste.

We will send you Warren's Pulley Cover on 30 days' trial. You pay for shipment if found satisfactory; if not, hold subject to our order and we will refund express charges.

Regular Case,	**125 sq. ft.,**	**$12.00**
Special	**" 40 " "**	**5.00**

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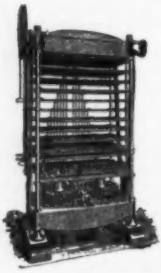
Hollow Steam Plate Press



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The most reliable machine of the kind on the market.

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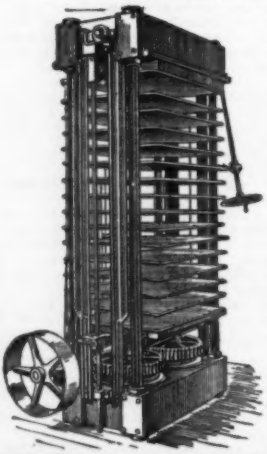
Reliance Machine Works

... Manufacturers of the ...

RELIANCE HOSIERY PRESS.



Hot Plate Screw Press for Hosiery Trade.
Write for Prices and Particulars.

CHAS. HART,
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CYPRESS WATER TANKS

Best in the World. **Send for Catalogue.**
Write for delivered prices, **H. F. LEWIS & CO., Ltd.**
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Knitting Machines For Sale.

Seven Stafford & Holt Automatic Rib Knitting Machines

of the following sizes: Two 11-inch, three 12-inch and two 13-inch. These machines are 8 feeds, sectional cams for both cylinder and dial. Three sets of cylinders and dials for each machine, 8, 10 and 12 needles to the inch. These machines are in good running order and are now in use. **Also three Brinton Machines:** Two 11-inch and one 13-inch, with the same sets of dials and cylinders as above stated. Address "S," care Textile World, Boston, Mass.

FOR SALE

A Fully Equipped Knitting Mill

Near Utica, N. Y.

Ready to start at a day's notice and capable of turning out nearly three hundred dozen children's ribbed and flat underwear per day.

Has water and steam power, two tenement houses, office, etc., situated in very centre of village, within one minute's walk of electric street railway with 5 cent fair to Utica.

Plant is inventoried at $35,000, with mortgage of $10,000 to run 5 years or longer. Owner will sell on easy terms or would put up value of plant against capital to run same, sharing equally in profits. Owner engaged in other business reason for selling.

Address,

"ADAMS,"

The Textile World, Boston, Mass.

FINISHING MACHINES Shears for Cloth, Carpets, Rugs, Plush with sets of Shears for one or both sides; Lapping, Folding, Rolling, Measuring Machine. The two and three roll machines make solid roll holding length and finish. Baling and Finishing Presses. GEO. C. HOWARD, Lansdowne, Delaware Co., Pa.

SAVOGRAN

CLEANS WOOL, FLOORS ANYTHING.
INDIA ALKALI WORKS, Boston.

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Is taught exclusively by the American Correspondence School of Textiles, New Bedford, Mass., under the personal direction of C. P. Brooks. This is the only school of its kind in the world, has been in operation for years, and its original methods are endorsed by prominent mill men. Complete information. New full catalogue just issued, sent to any address on request. Address

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Oldest in America.
Most Complete in the World.

Endorsed by leading Educators and Manufacturers.

COTTON, WOOL, WORSTED AND SILK.

Instruction given in Designing, Weaving, Carding, Spinning, Chemistry, Dyeing and Finishing.

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New Machinery in Every Branch of
Textile Manufacturing.

The most complete Textile School in America.

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95 FEDERAL STREET, BOSTON, MASS.
Entire Fifth Floor.

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Mill Architect and Engineer,
Exchange Building, 53 State St., BOSTON, MASS.
Plans and Equipment of Cotton and other Textile Mills a specialty.
Valuation of Mill Properties.

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SHORTEST AND QUICKEST LINE
TO THE
Principal Cities of the South and Southwest
INCLUDING
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AND TO
All Points in Florida and the West Indies.

It enters the CAPITALS of all the SIX STATES which it traverses in addition to the NATIONAL CAPITAL.

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SELLING DIRECT FROM MILLS.

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Manufacturing Cottonades, Cheviots, Sheeting, Shirting, Drilling, Duck, Kerseys, Plaids, Tickings, Hosiery, Towels, Seine, Twine Cotton Batting, Knitting Cotton, Bell Thread, Wrapping Twine.

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Single, Double, Three-ply, etc.
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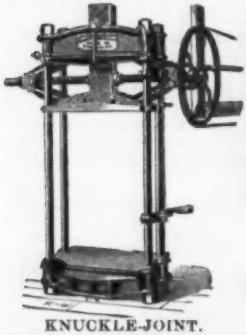
Large Assortment.

EDWARD S. HYDE, 223 and 225 Chestnut Street, Philadelphia, Pa.



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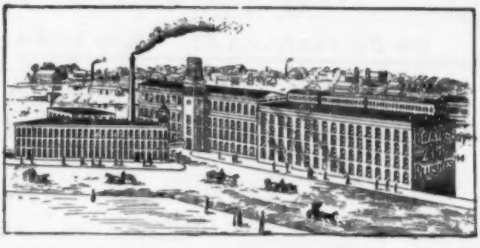

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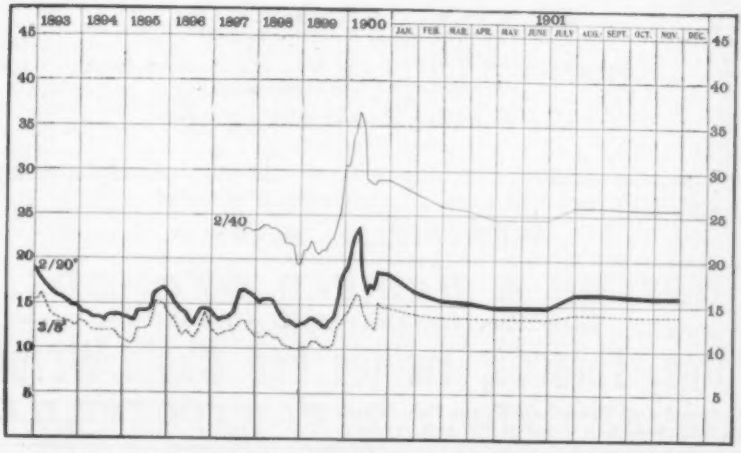
YARN DEPARTMENT.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Eastern Cotton Yarn Market.

The depression in the cotton yarn market still continues, and is most acute on coarse counts, where prices have yielded to a much greater extent than on the finer grades.

The cause of this difference is not hard to find, and has been repeatedly pointed out in these columns. There is an over-production of coarse grades, while the supply of fine counts has about balanced the demand.

The healthy conditions in the market for fine goods is due not to any superior foresight of the trade interested in this line, but to the fact that the manufacture of fine cotton yarn can not be started quickly on account of the necessity of having thoroughly skilled help.

It takes two or three generations to train help for the spinning of fine cotton yarn, and this fact alone is responsible for the strong condition of the market for these goods, as compared with the condition of the coarse yarn trade, which is demoralized by the huge stocks piled up by Southern mills during the past two or three years.

Such conditions always accompany the growth of an industry. After healthy conditions of trade have been restored either by curtailment of production or a widening of the market by securing of foreign trade, the march towards the natural goal of American cotton mills, the control of the world's cotton industry, will be resumed.

We compare in another part of this issue the yarn and piece goods export trade of England and the United States, giving the statistics of the cotton yarn exports of Great Britain. We export none at all. In this connection the quotations on English cotton yarn, which follow later in this report, will be of interest.

We quote on domestic yarn:

NORTHERN YARNS.

Single Skein.

19s	18
25s	17¼
29s	19¼
35s	22¼
40s	24

TWO, THREE AND FOUR PLIES.

Skein.

20s	17½
24s	19
26s	21
30s	22
40s	25
50s	33
60s	40

Chain Warp.

20s	18
24s	20
26s	22
30s	23
40s	26½
50s	35
60s	42

Philadelphia Cotton Yarn Market.

Since our last report, there has been no change for the better in the yarn market. Several mills sold out their accumulated stocks, especially in New York, and immediately asked more money for anything to be made up. Considerable orders were placed, at advanced prices, but not in any large

W. Warren Thread Works,

SPOOL COTTON
on 100 to 12,000 yd. Spools or Tubes.

A Specialty of Thread for Manufacturers Use
on Spools, Tubes or Bobbins.

Also Seaming and Hosiery Yarns
on Cones, Tubes or Skein.

Our bleaching and dyeing facilities are new and unsurpassed for prompt and neat work. Correspondence solicited.

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GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

MONUMENT MILLS,

Manufacturers of
White, Colored, Fancy and Double Twist

Cotton Warps

HOUSATONIC, MASS. 4s to 60s.

BARNESVILLE MFG. CO.

BARNESVILLE, GA.

HOSIERY AND UNDERWEAR YARNS,
Peeler, Bleached, Egyptian or any colors desired. Also,

FINISHERS AND BLEACHERS
of piece goods, underwear, towels, yarns, etc.

THE ONLY USERS OF JACKSON'S FORMULA OXIDIZED BLACK FOR HOSIERY.

We solicit your patronage. Work Guaranteed.

NEW YORK OFFICE and SALESROOM. 910 N. Y. Life Bldg., N. Y.

INDIAN ORCHARD COMPANY,

Indian Orchard, Mass.

Manufacturers of - - - -

COTTON WARPS AND YARNS
In gray and all colors, single or in any twist.

NOVELTY YARNS
In Cotton, Mercerized Cotton, Silk and Worsted, in various Patterns, Colors and Twists.

We are always pleased to assist our patrons of the Woolen Goods manufacture in special pattern warps for samples.

Carded and Colored Cotton for Mixing With Wool

Machined, or in Roving.

quantities, and prices have sagged back, nearly where they were before.

There is a considerable volume of yarn being used, and it ought to stimulate prices to a point which would at least represent cost, but present prices are claimed by all spinners to be at cost or below. Spinners, however, are in position now, to accept or reject orders, as their heavy obligations on contract cotton have all been worked out.

We hear of special low prices being made on Southern cone yarn, but there is an acknowledged difference in quality, to account for some of the extremely low prices named. Many yarns of inferior quality have been put on the market, especially in 16s, 20s and 22s cones. 2/30s and 2/20s warps are also extremely low. Also 14/2 skein or anything that might be called staple is sold at very low prices.

We quote the following as about market price:

Southern Frame Cones.

6s to 8s	12½ to 13
10s and 12s	13½ to 14
14s and 16s	14 to 14½
18s	14½ to 15
20s	15 to 15½
22s	15½ to 16
24s	16 to 16½
26s	16½ to 17
30s	17 to 18
40s	24 to 25
50s	30 to 31

Warps, Mostly Southern.

14s and 16s	13½ to 14
20s	14
22s	14½
26s	15
14/2	14
16/2	14 to 14½
20/2	14½
24/2	15 to 15½
30/2	16 to 16½
40/2	21 to 22
40/1	24

Skein.

4s to 6s soft	12½ to 13
10s and 12s	13 to 13¼
14s to 20s	13½ to 14
22s	14 to 14½
14/2	13¼ to 13½
16/2	14
20/2	14 to 14½
30/2	15
40/2	21 to 22
16/3 slack	13½ to 14

High Grade Southern Mule Cones.

10s	14½
14s	15½
18s	16½ to 17
20s	17 to 17½
22s	17½ to 18

Egyptian 4 to 5 cents above white.

Combed yarn 5 to 6 cents above carded.

Wool spun cotton yarn very dull. As is also woolen and merino trade. Spinners can hardly see one to two weeks' business ahead on woolen goods.

New England Cotton Yarn Co.

NEW BEDFORD, MASS.

JAMES E. STANTON, Jr., Agent.

Branch Offices:

ALBANY: 38 State Street. — *E. A. VAUGHN, Manager.*
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NEW YORK: 346 Broadway — *P. H. CORR, Manager.*
PHILADELPHIA: 213 Chestnut Street — *P. H. CORR, Manager.*

Mule Spun Hosiery Yarns,
Carded and Combed.

Colored Yarns,
Solid, Mixes and Randoms.

Spinners of Cotton Yarn

Frame Yarns,
Single and Twisted,
Carded—Combed—Bleached

Fine Yarns,
For Electrical Purposes

All Numbers 4 to 200.

From
American Peelers, Sea Island, Peruvian and Egyptian Cotton.

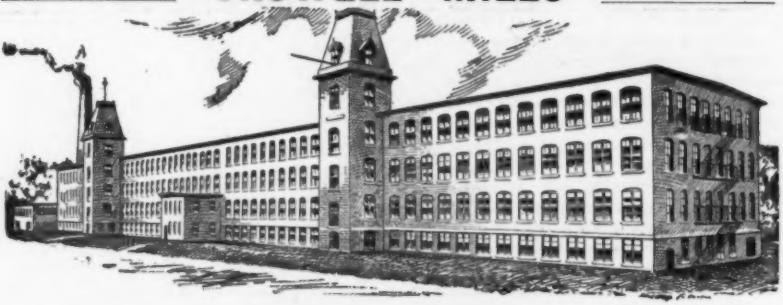
BENNETT,
HOWLAND,
ROTCH,
N. B. SPINNING,
COHANNET,
NEMASKET,
GLOBE,
SANFORD,
} **650,000 Spindles.**

Entire product sold direct to consumers through the Company's own offices.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.



COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER.

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Over 20,000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

"SIMPLICITY and ORIGINALITY Of DESIGN"

DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND EGYPTIAN COTTON.

The J. R. MONTGOMERY CO.,

WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL, WORSTED, MOHAIR AND SILK.

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

Quotations for Cotton Yarn at Manchester Eng:

Medium Yarn per lb. (Cop).

4s to 16s	twist counts	11 7/8 to	14 1/4
20s	twist counts	12 3/8 to	14 1/2
32s	twist counts	13 3/8 to	14 5/8
34s	twist counts	13 5/8 to	14 7/8
40s	twist counts	15 to	16 1/2
50s	twist counts	17 1/2 to	19 1/4
10s to 28s	weft counts	12 1/8 to	14 1/4
30s	weft counts	12 7/8 to	14 1/2
36s	weft counts	13 3/8 to	14 3/4
40s	weft counts	13 7/8 to	15
46s	weft counts	14 7/8 to	15 7/8
50s	weft counts	15 3/8 to	16 7/8
60s	weft counts	17 7/8 to	19 1/4
70s	weft counts	20 to	21 6/8
80s	weft counts	23 to	24 3/8

Medium Yarn.

20s	counts	12 7/8 to	15 6/8
32s	counts	14 6/8 to	16
40s	counts	15 3/8 to	17 1/4
50s	counts	15 3/8 to	19 1/2

Bolton Yarn (Egyptian).

60s	twist counts	20 6/8 to	23
70s	twist counts	23 5/8 to	26 5/8
80s	twist counts	26 5/8 to	30 5/8
90s	twist counts	30 1/4 to	37 3/8
100s	twist counts	34 3/8 to	44 6/8
120s	twist counts	41 to	41 5/8
60s	weft counts	19 6/8 to	21 6/8
70s	weft counts	21 1/4 to	23 3/8
80s	weft counts	23 3/8 to	25 6/8
90s	weft counts	26 1/8 to	29 7/8
100s	weft counts	29 1/4 to	34 1/2

Two Fold Yarn.

20s	counts	13 5/8 to	15 1/2
32s	counts	14 7/8 to	16 7/8
40s	counts	16 3/8 to	18 3/8
50s	counts	22 1/2 to	28 1/8
60s	counts	25 3/8 to	33 1/2
70s	counts	29 1/2 to	38 1/2
80s	counts	32 5/8 to	42 1/4
90s	counts	36 1/2 to	48 1/2
100s	counts	43 5/8 to	45 1/2

Worsted Yarn.

Spinners are busy and are booking orders which will carry them well into next year. Australian yarn has advanced within the last 6 weeks 10 cents per pound. That is, yarn that has been selling for $1.00 per pound is now sold at $1.10, and at this price spinners are booking as many orders as they can handle.

3/8 Blood yarn in 2/36s has advanced about 9 cents per pound and the lower grades 5 cents per pound. Spinners are not taking all the orders offered, as they prefer to take a portion of the business at an advance and then be in a position later for a further advance.

Spinners are trying to keep their old customers supplied and are not anxious to advance on them to a price which is beyond the reach of their customers. The weavers are placing orders for next year's business, and orders for many thousand pounds have been placed. The spinning mills had not expected the great demand and had hoped it would be delayed until first of the year, as they did

CATLIN & CO.,
YARNS.
67 Chauncy St., Boston
316 Church St., New York.
306 Chestnut St., Philadelphia.

Walcott & Campbell Spinning Co.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mills, Oneida Co., - N. Y.

JAMES E. MITCHELL & CO.,
COMMISSION MERCHANTS.
COTTON YARNS
For All Purposes.
122 & 124 Chestnut St., PHILADELPHIA. 74-76-78 Summer St., BOSTON.
SOLE AGENTS FOR
Lawton Spinning Co., - Providence, R. I.

TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON **WARPS**
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40s and above. AND
FITCHBURG, MASS. **WARPS**

COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS
Mercerized Cotton a Specialty
Write for Samples.
E. A. MORGAN,
54-66 Franklin St., N. Y. City

EICHMANN & STERNBERG
530 Broadway cor. Spring St., NEW YORK.
Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.,
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HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:

Broadway and Jefferson Ave., Camden, N. J.

Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

ALL NUMBERS SINGLE AND TWO-PLY,

Worsted YARNS, Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes

Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns **only.**

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

FRENCH SYSTEM. BRADFORD SYSTEM

B. F. BOYER CO.,

MANUFACTURERS OF

Worsted and Woolen Yarns

OFFICE AND MILL: Delaware and Cooper Streets. CAMDEN, N. J.

Albert Herbst & Co.,

EMERALD WORSTED MILLS,

East Allegheny Avenue,
Emerald and Wishart Sts.,

PHILADELPHIA, - PA.

MANUFACTURERS OF

Worsted Yarns

FOR KNITTING AND WEAVING.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.

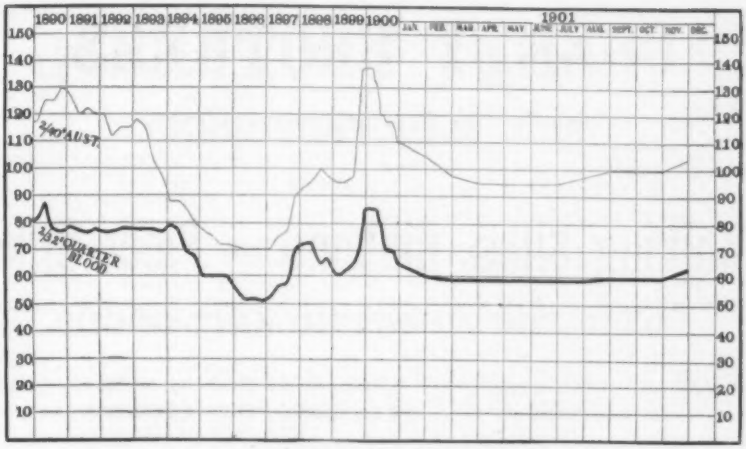


CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

not want to start new business in the old year, but the great amount of wool sold forced them to cover as orders were placed for yarn.

The initial orders for lightweight fancy worsted cloth was good, and many are the clothiers who have awakened to the fact that they have not enough cloth to fill out their lines.

We hear of one jobber who wanted a certain manufacturer to sell him all the cloth he had in process of manufacture to be shipped within a week at the manufacturer's own price. The manufacturer would not listen to the proposition and the clothier went without his cloth. The queer thing about this whole business is, that while the weavers are covering themselves on yarn on account of the market condition, the jobbers and clothiers have not placed orders to the extent that should be expected, but when a month has gone by and cloth is needed, the chances are that they will be forced to pay more money for cloth.

The weavers state that, if yarn is ad-

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

MOHAIR
PLUSH AND
BRAID
YARNS
QUEENSBURY MILLS,
WORCESTER, MASS.
CAMELS
HAIR, LUSTRE,
COLORED MIXTURES,
AND LOOP YARNS FOR DRESS GOODS.
FLYER SPUN and SINGLE WEAVING YARNS
H. HODGSON, PRES. and TREAS FRED HODGSON, SUPT.

CHENEY BROTHERS,

SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
929 Chestnut St., PHILADELPHIA.
79 Chauncy Street, BOSTON.
186 Franklin Street, CHICAGO.

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
120 Chestnut Street, Phila. 530 5th Ave., Chicago. Ills
Cash Advances, Cash Sales and Prompt Returns.
Consignments and correspondence solicited,

Eddy & Street,
COTTON, YARNS AND BRAIDS WORSTED, WOOLEN, SPUN SILK.
PROVIDENCE, R. I.

FIRE HOSE CORDS { From long staple cotton—6s to 20s yarn in 2 to 100 ply—16 lbs. without a knot.
COTTON WARPS { On beams—single or ply yarns, grey, bleached or colored.
GLAZED YARNS { All plys—any color—for braiders, harness and sewing threads.
UNIVERSAL WIND { For braider cops—warp yarns—grey or colored—2 inch to 12 inch traverse.

Dyeing facilities are new and best quality work guaranteed.

WHITTIER MILLS, **Selling Office, Springfield, Mass.**
Mill, Chattahoochee, Ga.

vanced too much, they will use cotton yarn and make cotton worsteds again. The demand for clays continues, and there will be more mills making this class of cloth this year. Some of the mills which have been on fancy worsteds are going to make clays, but they will have trouble in getting the right class of yarn to make these goods, as there will undoubtedly be a shortage of yarn.

The dress goods manufacturers have been busy and have been running late into the night. These manufacturers are resisting the advance in yarn, and are lowering the standard of their cloth to keep the price of their goods on the present level.

The worsted yarn spinner has never been so well off for orders and after the first of the year yarn is likely to advance still more as prices on most grades of yarn is reasonable.

We quote:

2/40s Australian	1.00	to	1.10
2/40s XX Delaine			1.02½
2/40s Half Blood	.85	to	.95
2/20 Half Blood			.80
2/36s ⅜ Blood			.68
2/26s ¼ Blood	.57½	to	.62½

Woolen Yarn.

Spinners who are busy are running on specialties. Without doubt the month of December will be a slow one for all woolen yarn spinners. Woolen yarn at the present time is to an extent being superseded by the use of worsted yarn. This is not only a fact in the manufacture of cloth, but is also as regards hosiery.

J. BROADBENT & SONS,
Woolen Yarns
for Knitting and Weaving, al o Wool Spun Cotton Yarns. Equipment first class, practical experience, small expenses, and low prices. Will take work on commission.
UNIONVILLE, CONN.

WOOLEN AND MERINO YARNS,
1 to 10 Runs, at reasonable prices.
All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray and colors.
Dress Goods Yarns a Specialty.
E. M. ROCKWELL,
Leominster, Mass.

TRY OUR
Silkine also Lisle Silk
FINISH
For Hosiery, Knit Goods, Yarn, Fast Black, Harsh Colors and Fibres.
O. K. SOAP CO., 968 Franklin St., PHILA.

J. S. DODDS,
517 Wool Exchange, New York, N. Y

MERCERIZED YARNS
Two and Three Ply, for All Purposes,
In Peeler, Egyptian and Sea Island, gassed and ungassed, natural and dyed. Fast Black for cross dyeing a specialty.
Through H. A. CAESAR & CO.

A. D. SALKELD & BRO.
With
FRED'K VIETOR & ACHELIS.
YARNS,
66-72 LEONARD ST., NEW YORK.

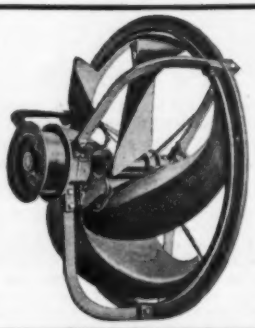
E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns, Double and Twist Yarns for the Weaving Trade.
PAWTUCKET, - R. I.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
PAWTUCKET, - R. I.

RICHARD CAMPION,
Selling Agent for—
Bristol Worsted Mills,
Highland Worsted Mills.
17 Bank Street, Philadelphia, Pa.

WOOLEN and MERINO YARNS.
EATON RAPIDS WOOLEN MILLS,
Eaton Rapids, Mich.

JAMES SPEED,
WORSTED and WOOLEN YARNS
A SPECIALTY.
ALSO TOPS.
170 SUMMER ST., BOSTON.
Long Distance Tel. 4168-2 Main.



THERE CAN BE BUT ONE BEST

—THE—

Davidson Fan Wheel

HOLDS THAT POSITION IN THE FAN FIELD, BOTH FOR DYE HOUSE VENTILATION, DRYING RAW STOCK, IN CARBONIZERS, ETC.

MASSACHUSETTS FAN CO.,
60 Exchange Bldg., Boston, Mass.

FANS, BLOWERS, HEATING COILS, MECHANICAL DRAUGHT.

SHODDY FLOCKS

WM. H. H. SLACK & BRO.
Springfield, Vt.

Carbonized Stock A Specialty.

Not connected with any "Trust" or "Combination."

MAIL SAMPLES FOR QUOTATIONS.

Secure our prices on bobbins with metal shields of all kinds,

CHARLES O. MURRAY,
.....NASHUA, N. H.

Manufacturer of **Spools, Bobbins, Skewers, Shuttles,** and Wood Turning, of everydes cription.

Get the Best! It Pays. Picker Sticks made of second growth North Carolina Hickory, thoroughly seasoned, are the best. We make them. Mail us a sample stick and get our prices. Orders filled promptly.

THE SOUTHERN BOBBIN CO., - - Greensboro, N. C.

The demand of the trade on hosiery is for a smooth finish and a worsted effect, and some of the hosiery manufacturers have taken to the use of worsted yarn, while others, preferring to know just what class of wool is being used, and, knowing that they can get the same effect, instead of having their yarn manufactured from a short clothing wool, are buying long stapled wool and are having their yarns spun to their usual counts without taking chances experimenting with some other make of yarn. They realize that it is wise to make this move from the fact that the demand for worsted yarn is greater than the supply.

Worsted yarn will be scarce and prices high. Many of the hosiery manufacturers who are in touch with the wool market, fearing a great advance in wool after the first of the year, are placing orders for yarn at this time for delivery in the spring. The only demands for immediate delivery for woolen yarn comes from the trade which is ending the present season.

French flannel is taking considerable yarn and some orders come from weavers making overcoatings. The knitters of stockinetts are having considerable yarn spun. The season will certainly end shortly, and December will see spinners short of orders with much machinery idle.

So far as the future is concerned there will be an average amount of yarn used, but it is a fact that weavers are not sampling with woolen yarn in their cloth as they say they prefer to manufacture cloth from solid worsted, and the result is that from this source the spinners of woolen yarn have little to expect.

After January 1st, when the new contracts begin to be filled, orders will be placed in fair quantities and spinners will have plenty of orders. The first of the season is always slow, and last year it was the same. Among the knitters who purchase wool and yarn the prospective business is satisfactory, but the present business is very unsatisfactory.

The manufacturers are busy and state they are having better business than for two or three months, and can see the end of it, but they will not order largely until after inventory time. This applies to knitters making an average to high grade garment, but those manufacturing fancy underwear have more business than they can handle, and the progressive manufacturers are refusing orders except at full prices.

We heard one knitter turn down orders for many thousand dozens because the

party ordering was looking for a slight reduction as an inducement to place the order. This particular manufacturer had placed many orders for yarn and wool because he was afraid of the market, but he said that this was earlier than he cared to buy and many orders have been deferred because of this fact. There seems no inclination to anticipate want for next year, but it is to be hoped that prices will not get away from the manufacturers before they place orders.

Shoddy, Waste and Rag Market.

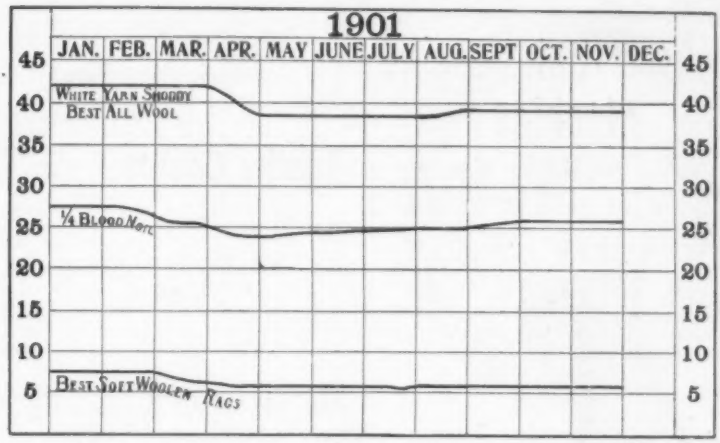


CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

RAG AND SHODDY MARKET.

Small orders have been decidedly in vogue in the shoddy market during the light weight season and will probably continue until the few remaining weeks are past. On the whole, there is very little complaint, as the season has footed up to a fair amount of business. In fact, some dealers have sold more stock, in small lots, of course, than for several preceding seasons. Prices rule about the same as at the beginning of the month. The call has been pretty general, with lights getting the preference.

Sampling for the heavy weights has already begun in certain quarters, and good business is pretty generally expected when the season gets under way.

NOILS AND WOOL WASTE.

The sharp demand for certain grades of noils that existed up to the middle of October has gradually ceased and although it has not affected prices as yet, the market shows signs of easing a little. The more plentiful supply and better selection has caused the buyers to become indifferent and rendered their position stronger. The present schedule of prices will probably remain for some weeks longer even with the steady supply from the worsted mills coming in.

Choice wool wastes are in some demand, prices ranging about the same.

RAG MARKET.

The period of depression in the rag market has at last reached a point where things are beginning to look brighter. Scarcely any change of prices has occurred up to the present writing, but it is safe to say that it is only a question of a short time now. The demand for new clips is such as to cause a firm tone and a general tendency to ask better prices. This is particularly true of choice lines and finely graded lots. Blues and blacks are receiving more call than any other stocks. It is a noteworthy fact that there is little demand for the lower grades, and this is also true at this time of softs, although there has been some improvement of late in regard to the latter. Dealers generally are feeling confident today of good business and better prices in the near future.

SHODDIES AND EXTRACTS.

White yarn, best all wool	38–40
White knit, all wool, best, fine	28–32
White knit, No. 2	25–28
Light yarn, extra fine	25–28
New pure indigo blue	23–25
Fine worsted, new black	24–26
New blue clip, best, fine	20–22
Dark mixed yarn, extra fine	22–24
All wool yarn, medium and coarse grades	18–20
Merino.	
Fine light, all wool, No. 1	24–25
Medium light, all wool, No. 1	16½–17½
Medium light, all wool, No. 2	14–16

THE

American Woolen Co.'s

many mills are using the

Jackson Belt Lacing Machine

Why Cannot You?

An indispensable adjunct to every factory in which belting is used. The cost of lacing one-quarter that of old methods. Lacing lasts three times as long. One cent laces a 5-inch belt. Three minutes to lace a 6-inch belt.

REFERENCES.

Putnam Woolen Co., Putnam, Ct.
Slater Woolen Co., Webster, Mass.
Worcester Bleach & Dye Works, Worcester, Mass.
Thun & Jansen, Reading, Pa.
Mt. Vernon-Woodbury Cotton Duck Co., Baltimore, Md.
Blood Knitting Co., Amsterdam, N. Y.
Calumet Woolen Co., Uxbridge, Mass., and many other Textile Mills.

Awarded the Silver Medal at the Pan-American Exposition, the highest award given for Belt Lacing Machines.

Ask for Catalogue No. 13.

DIAMOND DRILL & MACHINE CO.,

Walnut St., Birdsboro, Pa.

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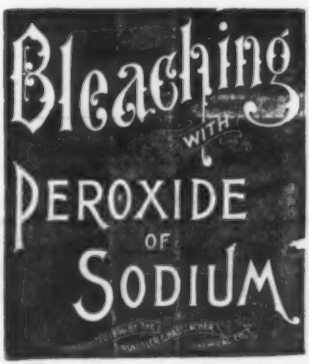

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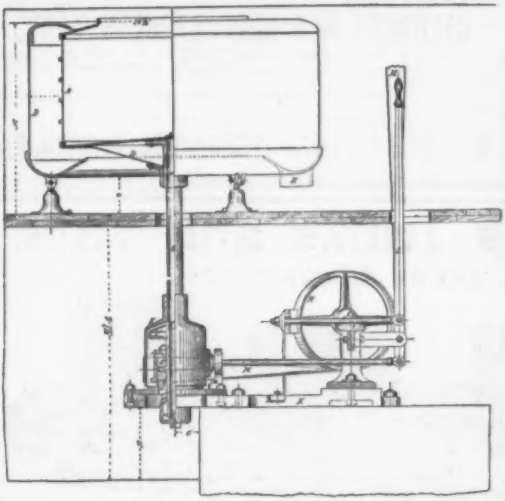

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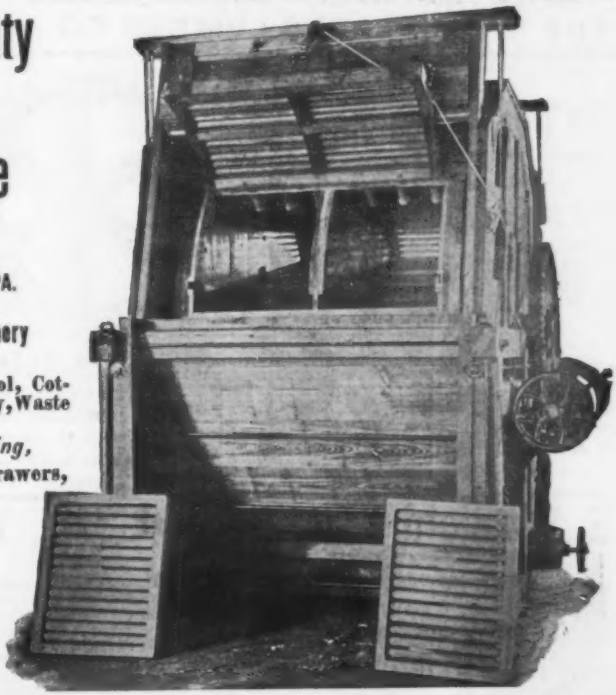

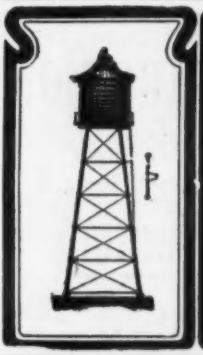

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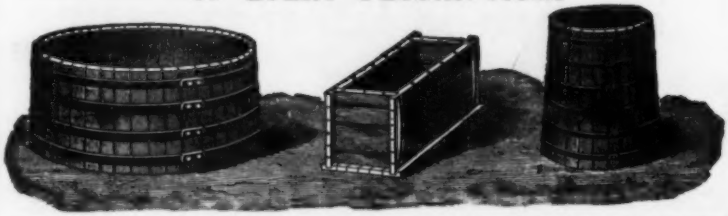

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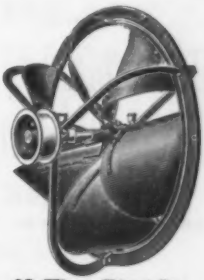

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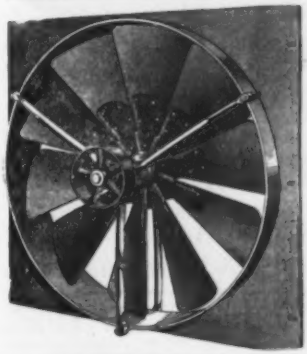

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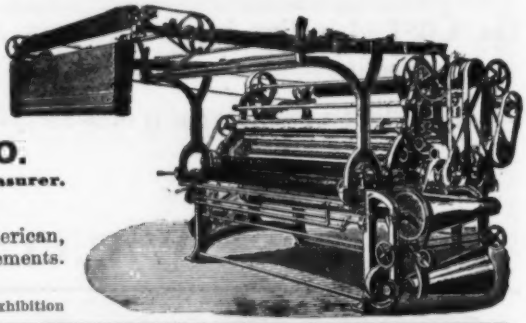

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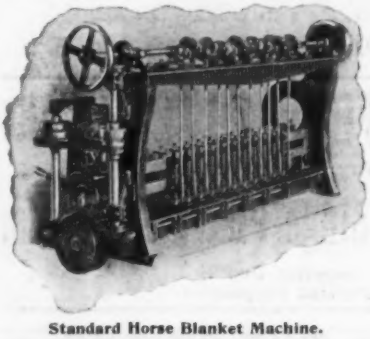

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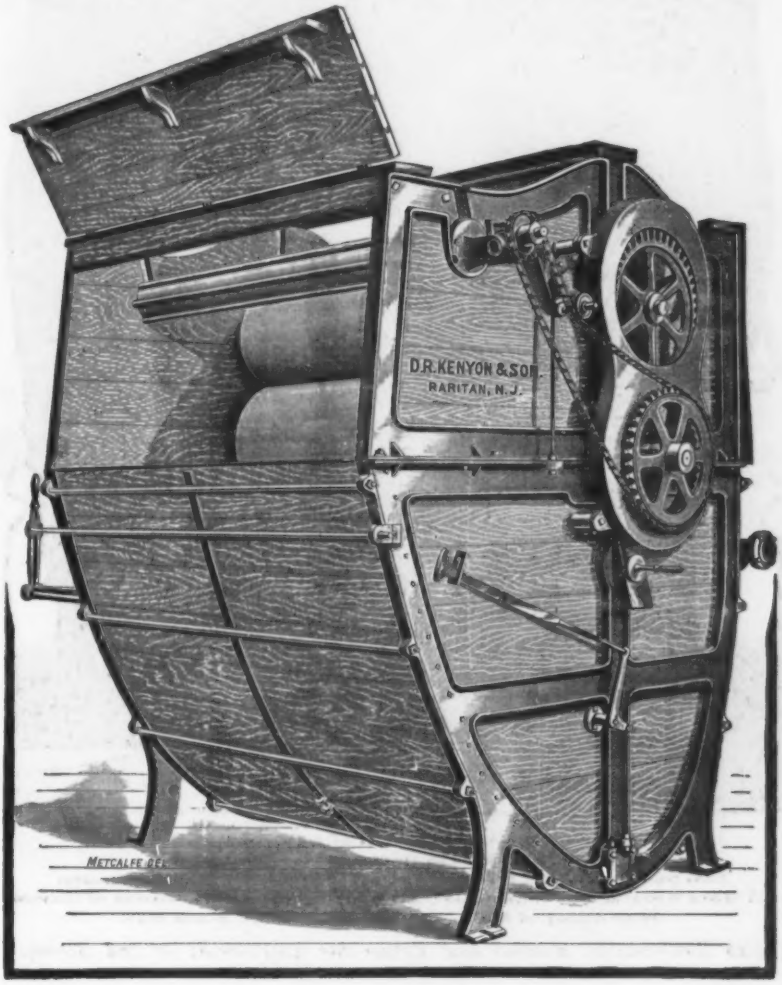

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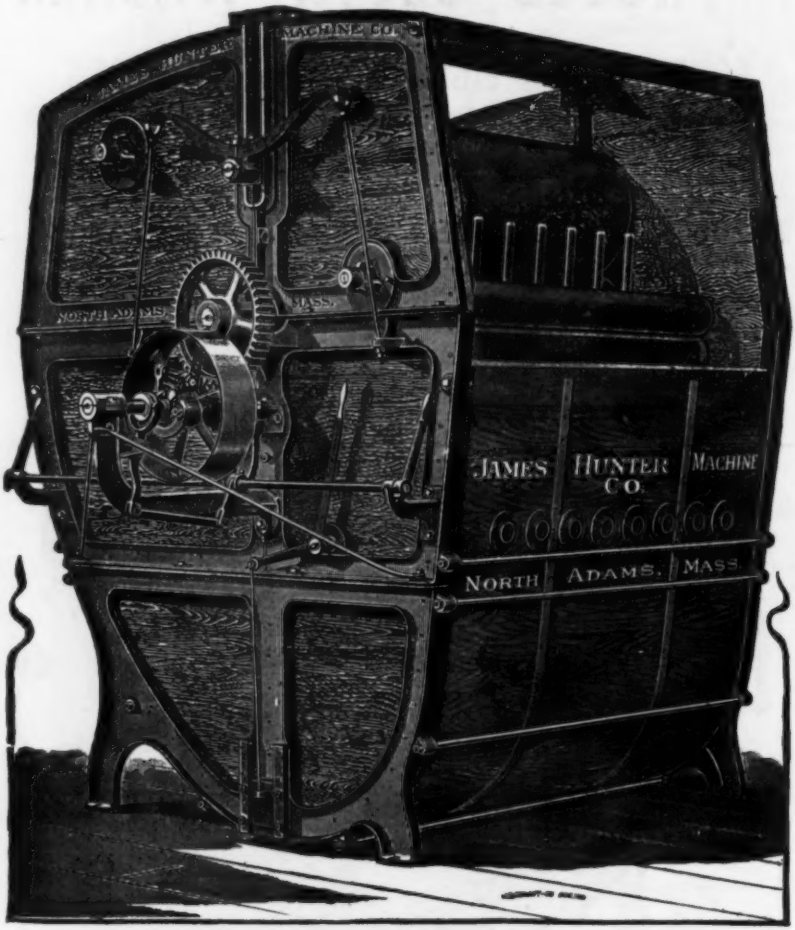

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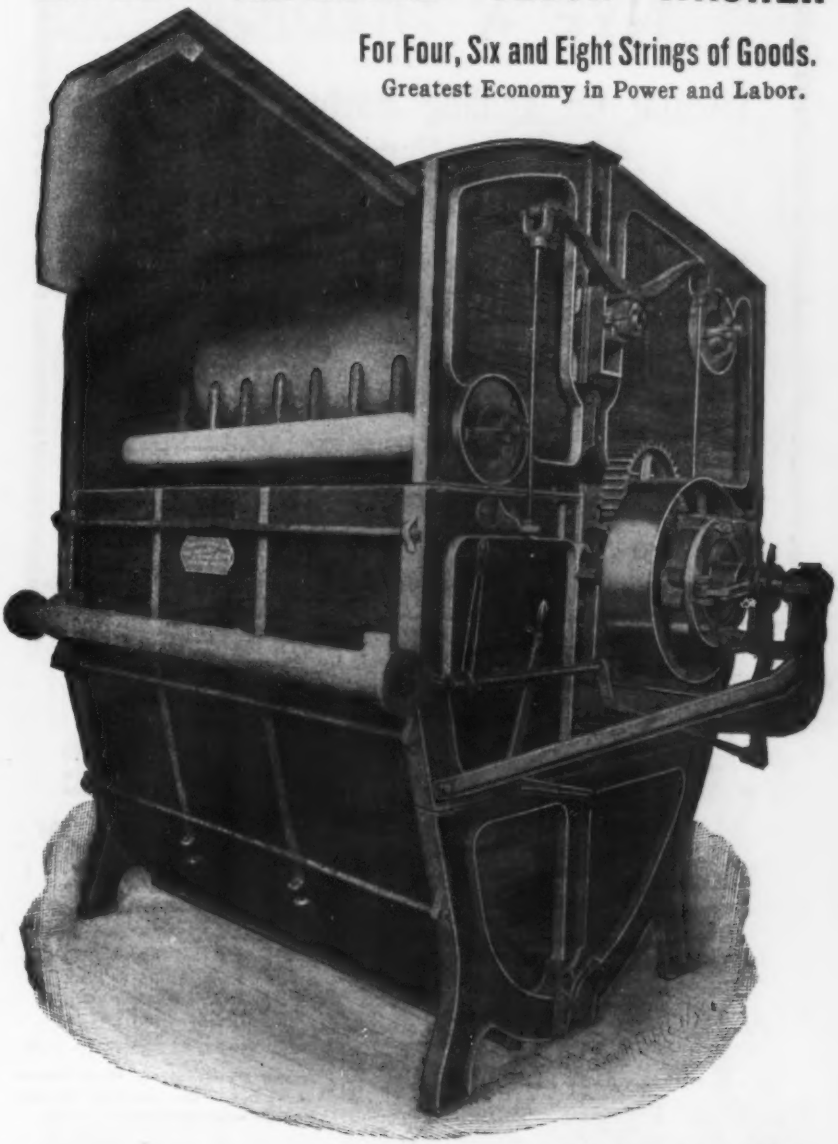

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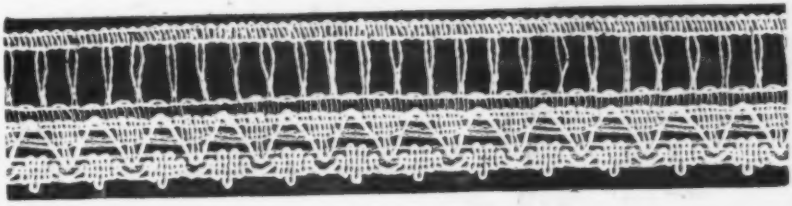

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PRACTICAL AND ECONOMICAL IN OPERATION.

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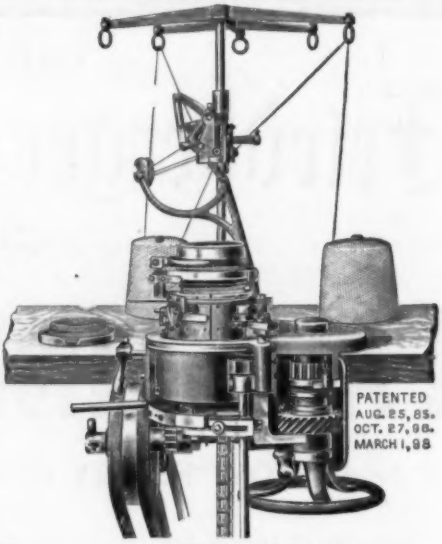

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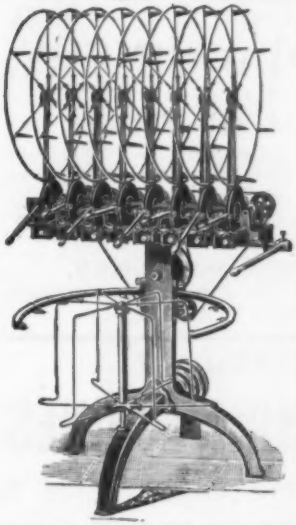

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UNEXCELLED MACHINERY FOR RIBBED UNDERWEAR,

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These machines have the **only absolutely perfect Take-up Device** Depends neither on springs, friction, ratchet, nor state of weather for its efficiency.

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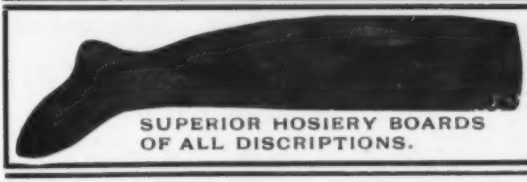

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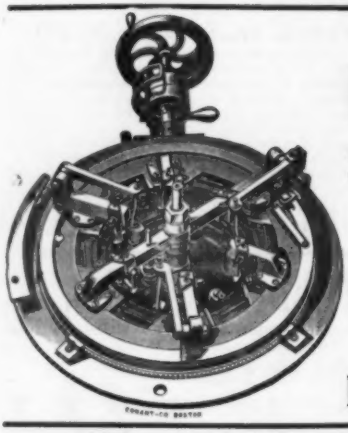

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Either plain or full automatic, with stop motion or complete, for

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CUFFS and ANKLETS.

The Leighton Circular Machines are the only ones which **Rack** or **Shog** the needles for fancy borders; also built for automatic striping; and with from 4 to 16 feeds for underwear.

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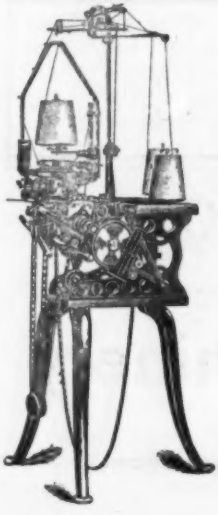

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Two-Feed 7-8 Automatic for Ladies String Work, also Black Legs with White Feet.

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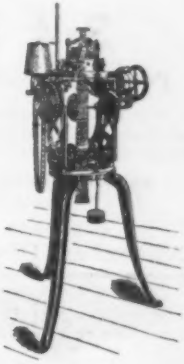

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Adopted by leading mills everywhere successfully. Mills started with Dye Formula for black with lisle thread finish, also with colors and bleaching formulas if desired, taught by Mr. Dubois himself. Will contract for the Dye formulas alone, or for any piece of machinery required to start fast black dyeing.

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These three blacks will not turn green when tested by muriatic acid, and is almost ungreenable to acid test.

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FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers Range on Half Hose, from the coarsest to 220 needle.

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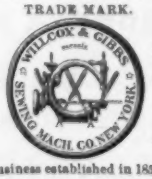
MAKES OVER 3000 STITCHES PER MINUTE.

TRADE MARK.

For SEAMING, HEMMING AND OVEREDGING Flat, Ribbed and Fancy Underwear and Hosiery. And for OVEREDGING Lace Curtains, Ribbons, Belts, Hat Bands, Flannels, Blankets and other Fabrics.



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2. The "OVERLOCK" ELASTIC CONCEALED STITCH HEM OR WELT.
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   And in each case with one operation only, including trimming and covering of raw edges.
4. The "OVERLOCK" TAILOR-MADE SEAM. (By means of the Feller.)

Business established in 1859.

THE ELASTICITY OF ITS STITCH EQUALS THE FULL STRETCH OF THE GOODS.

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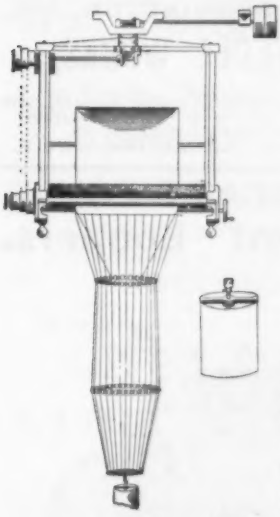

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Do you want the best Dryer made? If so

Buy the PATENT EXCELSIOR VERTICAL DRYER.

It is no experiment. Over 40 now in use in best mills. Does more work; takes up less room; Does better work than any machine now made. This is what mill superintendents report. Will save their cost in short time. Can you afford to use old style. Send for circulars of Dryers and Stamping Machines to

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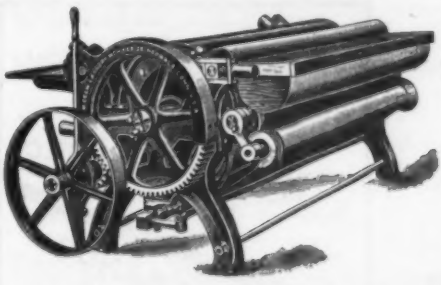

This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

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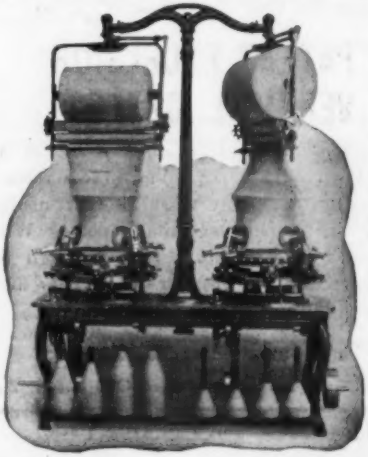

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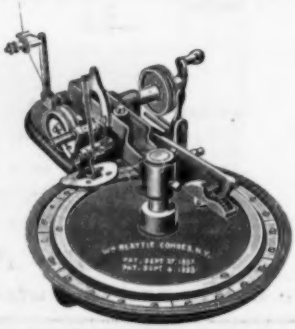

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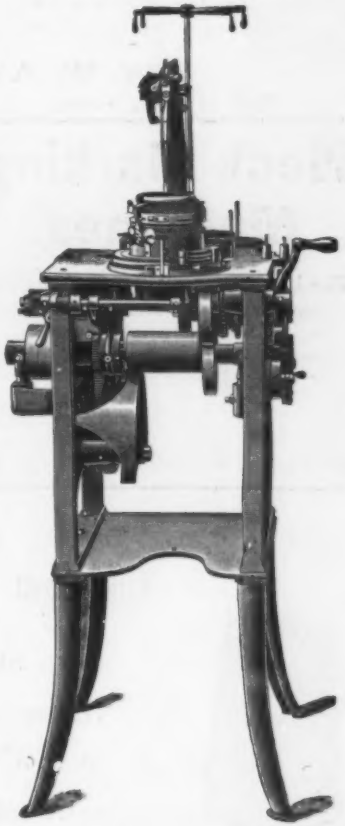

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Greatest production of perfect work at least expense.

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With Patent Variable Motion.

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Union Button Sewing Machines.

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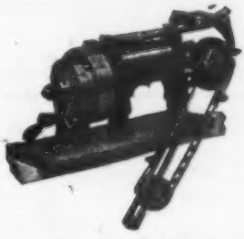

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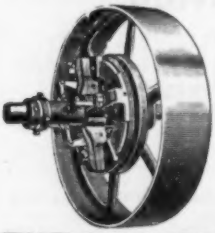

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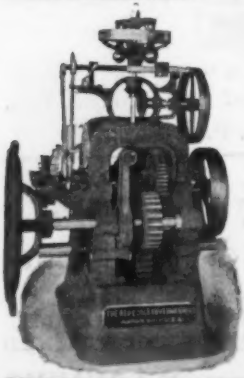

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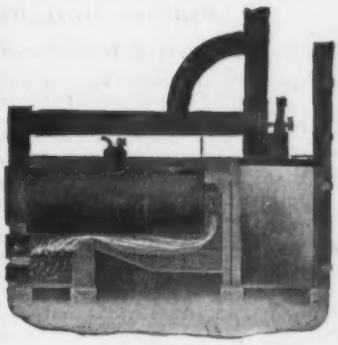

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Is cheaper in first cost than the tall chimney. And once installed it means smaller operating expense; cheaper fuel can be used, or more heat extracted from a good quality of coal; the smoke nuisance is done away with.

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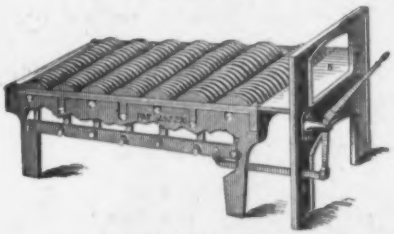

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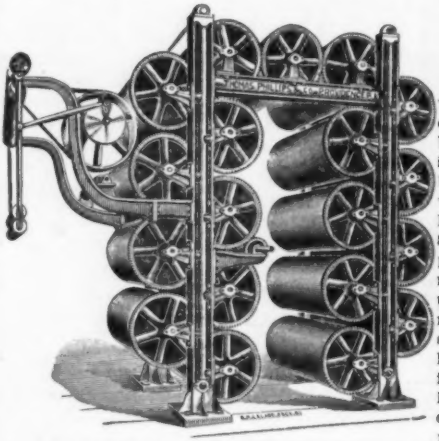

Phillips Upright Drying Machine.

The cut shows a 19-can machine with two tiers with intermediate can for continuous drying. We build any arrangement of stringing and furnish any desired number of cans, of any length, either with Phillips Steel Head or Cast Iron. We strongly advise our Steel Head Can. It is a big improvement as eight years' experience has demonstrated. This upright machine enables cloth to run without wide intermediate spaces between the tiers, as in horizontal machine, thus avoiding "scrimps." We also build Horizontal Frames, but on radically different principles from most others. Our illustrated catalogue explains all these points at length and has many plates showing different styles of stringing. It may be had for the asking.

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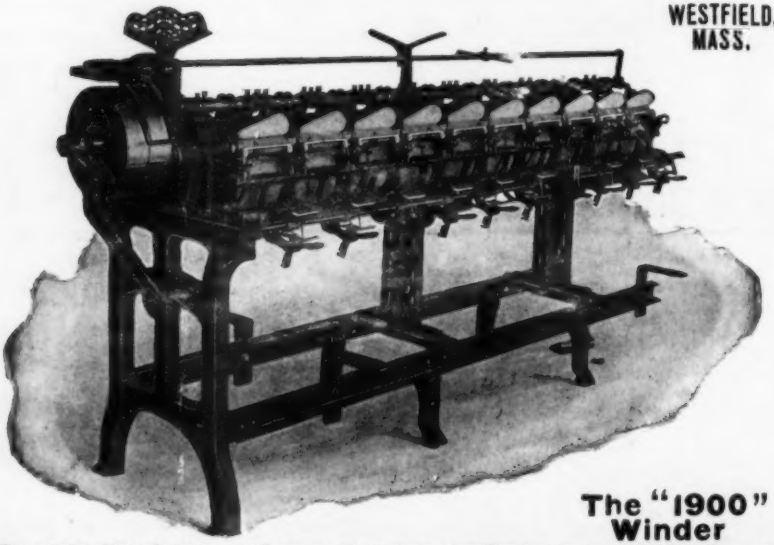

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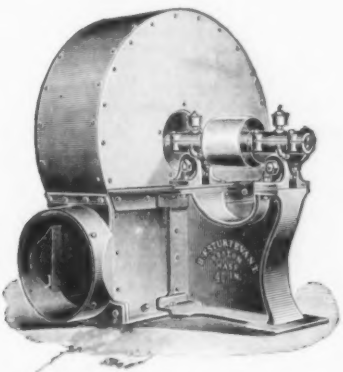

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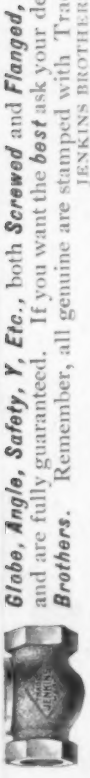

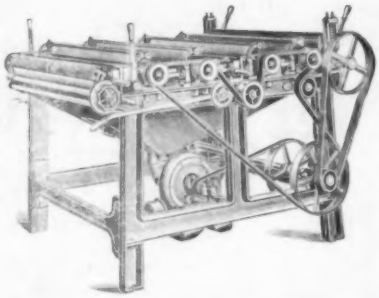

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